JOURNAL

OF THE

INDIAN MEDICAL ASSOCIATION

Vol. VIII *Calcutta, November, 1938* No. 2

THE ELASTIC ANTEROLATERAL THORACOPLASTY IN THE TREATMENT OF APICAL-SUBAPICAL CAVITARY LESIONS

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Simple Apicolysis

This method consists in obtaining a total extrapleural decollement or separation of the pulmonary apex from the thoracic wall, without introducing any foreign substance to tampon the opening thus formed. This method requires the resection of at least one rib.

Tuffier in 1893 was the first to perform extrapleural pneumolysis without a filling. The severe hæmoptysis for which the operation was performed was stopped. A. Mayer in 1913 filled the extrapleural space with nitrogen. This operation was afterwards tried by Jessen, Bessen, Nissen and Rieckenberg. In 1929 Lauwers described a supraclavicular method of apicolysis by resecting the first rib and the sternocleidomastoid, omohyoid and the scalenus anticus muscles. This technic was followed by numerous other authors (Fragenheim, Uhlenhut, Kremer, Mantau, Jacobovici and Gregoire and Broglio).

Coffey in 1930 in Russia did the apicolysis by removing the first rib through the posterior triangle of the neck. This method somewhat modified was followed also by Antelava, Bodungen and Nissen.

Omodei-Zorini in 1931, after having observed the frequent complications in patients operated with paraffin filling, proposed to do a simple apicolysis without introducing foreign substances, resecting the second rib anteriorly and by doing a total extrapleural decollement or separation of the apex. Afterwards he specified its clinical indications to include the microcavitary, fibrous-ulcerative forms localised in the apex-forms which have a spontaneous tendency to retract but are hindered in doing so by a pleural symphysis, the micronodular tuberculosis of the apex having a hæmopoietic or erosive tendency, or as a complement to an inefficient artificial pneumothorax on account of local adhesions.

This method was modified further in 1934 by Manfredo Ascoli and Luzzatto-Fegiz by adding to it the resection of the first rib.

Apicolysis With Plombage

In 1901 Sarfert performed an extrapleural pneumolysis with a gauze filling preliminary to cavity drainage and in 1907 Schlange used the same operation in a case of hæmoptysis due to an apical cavity. He, after having dissected the parietal pleura from the endothoracic fascia through an aperture in the wall of the thorax, filled the resulting space with iodoform gauze. In 1910 Tuffier, at first in cases of abscess of the lung and later in cases of

apical tuberculosis, had done apicolysis with plombage using as a tampon, fatty tissue (fresh human omentum removed from another patient). This was the first operation of extrapleural pneumolysis with permanent tamponage. In 1911 he employed a fresh lipoma. Later this was tried by Wilms, Bull, Davies and Lilienthal.

Jessen in 1913 advised a product of wax and vaseline with a small quantity of magnesium carbonate.

Solid paraffin was proposed as filling by Baer of Davos in 1913. It must be in a warm mouldable condition. He used it with a small quantity of bismuth carbonate and vioform.

Shivers, Archibald, De Winter, Sebrechts, Hedblom, and Davies have been the chief advocates of the use of the pectoral muscles as a filling for the extrapleural space.

Tuffier, Gwerder, Kroh, Mayer, Statler and Schoenlank have tried to maintain the extra-pleural cavity thus formed by introducing gas directly by means of a puncture or with a small rubber bag filled with air.

Morelli has taken up again the method applied by Di Fonzo.

In 1920 Edeh used the oil obtained by liquefying animal fat.

Archibald has used as the tampons parts of muscle (Pectoralis if the operation is done by the anterior route, trapezius and rhomboid if posteriorly). Lilienthal and Davies have used the same method.

As to the technic, some authors advise doing the operation through the posterior route (Winternitz, Redaelli, Baer, Dumarest, Roux, Bernou and Fruchaud), others through the lateral side (Duval, Quinke, Veltis) and still others through the anterior wall (Tuffier, Alessandri, Ascoli, Goffaerts, Sebrechts, Winter, Landschoot).

The paraffin method was greatly extended by Friedrich, Winter, Alexander, Bull, Sauerbruch, Eiselsberg, Behrens, Brunner, Sturtz, Lauwers, Neumann, Bernou and Fruchaud, Nissen, Winternitz and Widokovitz, Walzel, Sebreclats, Zandonini, Pototsching, Redaelli, Goffaert, Hauke, Kremer, Beitz, Bull, Bernard and Reto.

As to the results of this operation the statistics of the various authors give great differences. Favourable results are given by Baer, Ziegler and Alexander and especially by Redaelli, Winternitz and Widacovitz, Bernou and Fruchaud.

This method, however, is very rarely used even in those countries (Hungary, Germany, etc.), in which it reached the greatest diffusion and this above all, besides the relativeness of the favourable results, because of the grave complications that can follow: Homo and contralateral bronchopneumonia; danger of decubitus; moving of the tampon especially in the cases operated through the anterior route; acute hæmorrhage; extrapleural siero-hæmorrhagic effusion; rupture of the pleura; perforation of the lung; signs of compression on the blood vessels; infectious processes.

Apical Thoracoplasties

Until 1928 the aphorism of the German authors that "every ulcerative lesion must be treated with a total thoracoplasty" held the ground. Therefore for many years total resection were done even in cases of localised lesions and only recently was this theory modified. With regard to the apex Bouniot and Graf since 1928, followed by Jessen, Ulrici, Konlienovic, Yanko, Frankenheim, Thomsen, etc., maintained the necessity of associating with every plastic of the Sauerbruch type, the total ablation of the first rib rather than the removal of only a small piece of it. Dolley, Head and Hedblom operated many patients of partial posterior thoracoplasty limited or extended to 7-9 ribs according to the technic of Hedblom.

Niessen and Fick in the operations for apical lesions have extended the resection to the first 7-8 ribs maintaining as general conception that the persistence of the (posterior) ribs prevents a sufficient retraction.

The idea of extending the costal resection towards the base was greatly patroned by Bernou and Fruchaud and by Roux and Picot.

Maurer himself, who with Proust had imagined and put to practice an apicolysis by doing a subtotal extirpation of the first two ribs, has recognised after-

wards the necessity of resecting other ribs, at least as far as the one just beneath the stricken territory. Many other authors accepted this point of view (Fiocchetto, Coryllos, Vaccarezza, Rolland, Dumarest, Paolucci, Alessandri, Ascoli, Jachia, etc.).

In 1929 Maurer and Rolland, having observed that with a paravertebral thoracoplasty large caverns of the superior lobes did not collapse, proposed an anterior supplement to this operation thus obtaining an enlargement of the thoracoplasty; such a supplement was performed in a few cases even in the Sauerbruch School and by Bernou and Fruchaud. In 1929 Sebrechts and Winter also did a thoracoplasty extended posteriorly by cutting the ribs according to Bonniot's idea, that is more towards the spinal column.

In 1932 Proust, Maurer and Rolland systematized this method and added to it the resection of the transverse processes. Graf has described a method which consists in the resection of the first rib and in the resection of the second from the transverse process to the insertion of the pectoralis minor or also of the others. Then follows the resection up to the 6th—7th ribs posteriorly with a decreasing extension from the top to the bottom. This operation is completed by separating the apex from the pleural cupola according to the indications of Lauwers.

Recently Maurer in France and Omodei-Zorini and L'Eltore in Italy have completed the different types of partial posterior thoracoplasty with the "Velario di Compenso" of Morelli. Redaelli has been doing for quite a while supracavitary thoracoplasty which usually consists in the resection of the second rib anteriorly and of the third laterally.

This work has as its scope to precise whether apical-subapical cavitary lesions can be benefited by the elastic antero-lateral thoracoplasty. If so, what is its field of application?

In order to make a question of this discussion, I examined 86 cases operated of total and partial superior elastic antero-lateral thoracoplasty for the cavitary lesions of the apex and subapex.

In each of these cases was taken into consideration the course of the disease before the operation, the general and local clinical state at the moment of the treatment, the modifications of the form and volume of the caverns during the first three months, and finally the definite results.

For the preoperative course I based myself on the history and when it was possible I reconstructed the evolution of the preoperative course by means of rœntgenograms.

As to the general clinical state at the time of the operation I took into consideration the toxæmic state. For the local state I tried to precise the type of lesion, seat, size and shape of the cavern, the radiologic aspect of the border of the cavern, and the conditions of the surrounding parenchyma, the presence of other lesions close to or at a distance from the cavern and the type of the neighbouring lesions.

With the study of the immediate results, besides following closely the postoperative course, I considered the eventual variations as to the seat, the volume, and the form which the cavern have undergone.

To evaluate the negative results, I considered the results into three classes:—stationery, improved and healed up.

GROUP I—SUBLOBAR CAVITIES

Case No. 1. M. Clotilde, aged 36 years. In 1932 exudative pleurisy. First clinical signs of the disease in January, 1933 with pseudo-influenzal syndrome. In March, 1933 phrenico-exeresis on the right side. Admitted in Carlo Forlanini Institute with the diagnosis of, "Caseous bronchopneumonic lesions of the right lung with a cavern in the upper lobe." Febrile state. Marked toxæmia and notable wasting.

4th December, 1933. Total antero-lateral thoracoplasty on the right with resection of the ribs from I—VI. Postoperative course normal. Disintoxication with rapid general improvement. Slight diminution in the volume of the cavity. After five months regression of the bronchopneumonic lesions, persistence of the cavity which is reduced to 1/3.

Case No. 2. S. Leudonia, aged 24 years. First clinical signs of the disease in 1933. Repeated hæmoptysis. In July, 1933, A. P. on the left side. In July, 1934 phrenicoexeresis on the left side. Was admitted in the Institute on 4th March, 1935. Progressive wasting and distinct toxæmia. On the left, large cavity which occupied all the apical region. Left hemidiaphragm elevated.

11th and 20th March, 1935. Total antero-lateral thoracoplasty. Slight modification of the form and volume of the cavity. Afterwards the cavity remained unmodified.

Case No. 3. A. Bianca, aged 38 years. Onset of the disease in January, 1931. In September 31, A. P. on the right side, abandoned after a year. Entered in the Carlo Forlanini Institute on 20th June, 1935. Febrile state, grave toxæmia and notable impoverishment. Locally on the right

side: "Large cavity which occupied all the supraclavicular region, bounded by thick margins. Another big cavity of the recent date below the first one which is stretched lateralwards. Homo and contralateral nodular diffusion.

28th June and 8th July, 1935. Phrenico-exeresis and resection of the I—VII ribs.

Slight improvement in the general condition, no modification of the cavity. Afterwards modification in the form of the cavity while the upper remained just the same. In December, 1935 posterior Proust-Maurer thoracoplasty. In March, 1936 the patient died.

Case No. 4. D. M. Maddalena, aged 31 years. Onset of the disease in 1931 with toxæmic symptoms. In February, 1935 hæmoptysis. Was admitted in the Institute on the 22nd July, 1935. Febrile state, notable wasting and marked toxæmia. Locally on the right side, "Large apical and subapical cavity. Micronodular diffusion in the sorrounding tissue."

9th August, 1935. Phrenico-exeresis. On 16th October, 1935. Superior type of elastic antero-lateral thoracoplasty with resection of the first three ribs. Improvement in the general condition. The cavity is deformed and reduced in volume.

27th April, 1936. Demolitive thoracoplasty of Proust-Maurer with the resection of 4 ribs.

Case No. 5. B. Umberto, aged 22 years. First clinical symptoms of the disease in May, 1933. In June, 1933, A. P. was done. In December, 1934 it was abandoned on account of effusion. Was admitted in the Institute on the 26th September, 1935. Fever and marked toxæmia. Locally on the left side, "Large infraclavicular sublobar cavity. Surrounding tissue asclerotic."

20th December, 1935, and 15th January, 1936, phrenico-exeresis and total antero-lateral thoracoplasty. Slight improvement in the general condition and slight reduction in the volume of the cavity without modification in the appearance. Afterwards persistence of the cavity. On 8th March, 1937 demolitive Proust-Maurer thoracoplasty and after a month the patient died.

Case No. 6. V. Maria, aged 40 years. First clinical signs of the disease in June, 1934. On 16th September, 1935 phrenico-exeresis on the left side. On admission marked toxæmia with notable wasting. On the right two large cavities separated with a thin septum occupying the whole of the upper lobe.

21st January and 5th February, 1936, total antero-lateral thoracoplasty. After the operation no modification and afterwards the whole lobe turned into a cavern.

Case No. 7. T. Vera, aged 36 years. Onset of the disease in March, 1934. In June, 1934, A. P. on the right side. On the 5th March, 1935, phrenico-exeresis. On admission in the Institute: Febrile state and notable wasting with marked toxæmia. Locally large cavern occupying the whole of the upper lobe on the right. Below pyopneumothorax.

31st May, 1935. Partial antero-lateral thoracoplasty with resection of the first three ribs. Slight repression of the general condition with small reduction in the volume of the cavity. No further improvement. The patient died after 11 months of the operation on account of spreading of the disease in the other lung.

Case No. 8. N. Francesco, aged 41 years. Onset of the disease in 1929. Was admitted in the Institute in March, 1934. Giant cavern which occupied the whole of the interior of the right upper lobe. 24th April and 14th May, 1934. Phrenico-exeresis and total antero-lateral thoracoplasty with resection of the ribs from I to VI on the right side. After the operation no evident modification of the cavity. After 45 days of the operation the patient died of hæmoptysis.

Case No. 9. S. Giulia, aged 32 years. Onset of the disease in 1930. In July, 1932, phrenico-exeresis on the left side. On admission: Febrile state with notable wasting. Large cavity occupying the whole upper lobe on the right with homolateral micronodular diffusion.

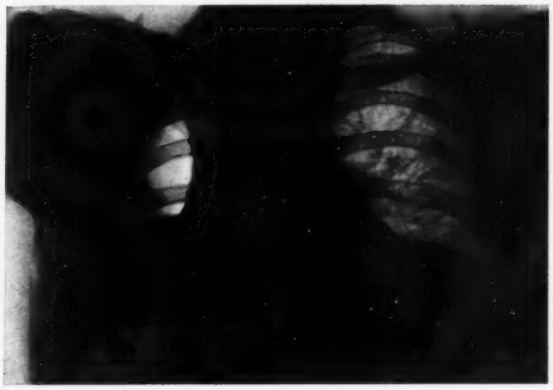
23rd January and 24th February, 1933. Total elastic antero-lateral thoracoplasty and simple apicolysis. Post-operative course is complicated with basilar homolateral bronchopneumonia which resolves after a month. No modification in the cavity. The patient died in July, 1935.

GROUP II—OLD CAVERNS THAT ARE SURROUNDED BY CICATRICIAL TISSUE

Case No. 10. P. Raffaele, aged 28 years. Onset of the disease in 1925. In June, 1931 entered in sanatorium. Bilateral A. P. was done. Right A. P. is complicated with effusion. Admitted in the Institute on the 30th January, 1933. General condition discrete. Inefficient pyopneumothorax. Apex adherent. Large apical and subapical cavity on the right side. On the left side partial pneumothorax. On 3rd March, 1933. Phrenico-exeresis on the left side. On 21st July, 1933, superior type of antero-lateral thoracoplasty with resection of the first four ribs. Modification in the shape and size of the cavity. Improvement in the general condition. Complete clinical cure in five months.

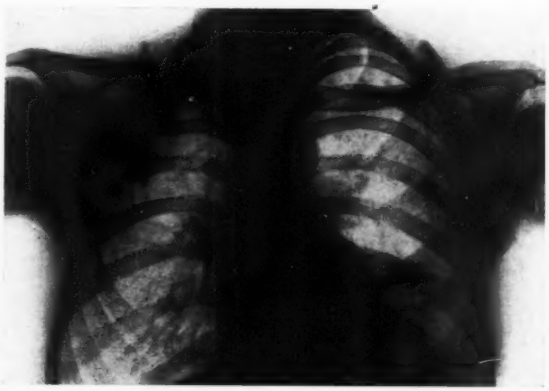
Case No. 11. D. C. Veturia, aged 20 years. First clinical signs of the disease in May, 1928 with hæmoptysis. In August, 1928, A. P. was done on the left side which is complicated with effusion in April, 1929. Was admitted in the Institute on the 5th June, 1931 with the diagnosis of "Large apical-subapical cavity on the left side." Depressed condition with notable wasting. On the 7th August, 1931, phrenico-exeresis on the left side. On 28th November, 1931, apicolysis with plombage by the anterior route. On 15th March and 22nd March, 1933, total antero-lateral thoracoplasty with resection of the ribs from I to VIII. Post-operative course uneventful. Rapid improvement in the general condition. Reduction and deformation in the volume of the cavity. Total elision of the cavity in five months after the operation.

Case No. 12. G. Fernanda, aged 26 years. First clinical signs of the disease in 1929. In the same year A. P. on the left side. It was inefficient. In June, 1933, phrenico-exeresis on the left side. On admission general state discrete. Subapical cavity on the left side. July, 1933,



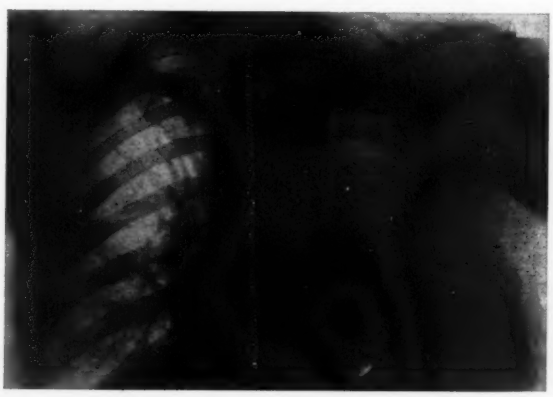
CASE No. 10. P. R. (Fig. 1-A.) On the right side inefficient pyopneumothorax. Apex adherent. Large apical subapical cavity.

CASE No. 10. P.R. (Fig. 1-B.) One month after the operation. Pyopneumothorax was treated with progressive detension and lavage.



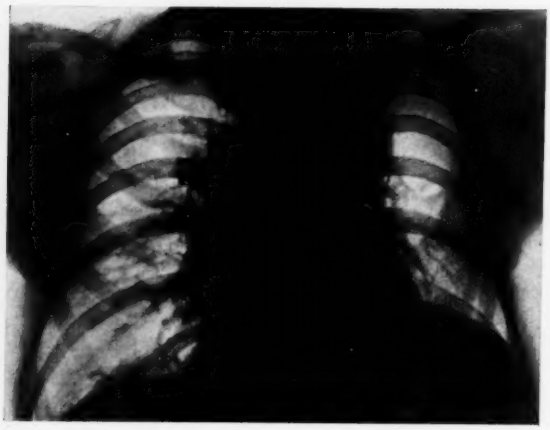
CASE No. 10. P. R. (Fig. 1-C.) January 1934. Five months after the operation. (First four ribs). Total elision of the cavity in 5 months.

CASE No. 19. P.A. (Fig. 2-A.) Before the operation. On the left side: Fibrothorax with a large infraclavicular cavity. Homolateral nodular dissemination.

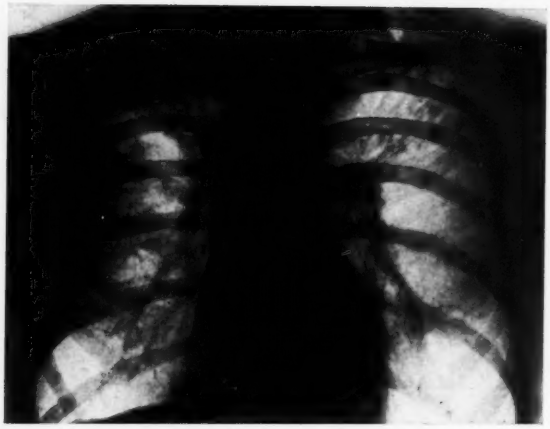


CASE No. 19. P.A. (Fig. 2-B.) Radiogram of 4th January 1935. 6 months after the operation of the sup. type of anterolateral thoracoplasty (first 4 ribs). Complete closure of the cavity.

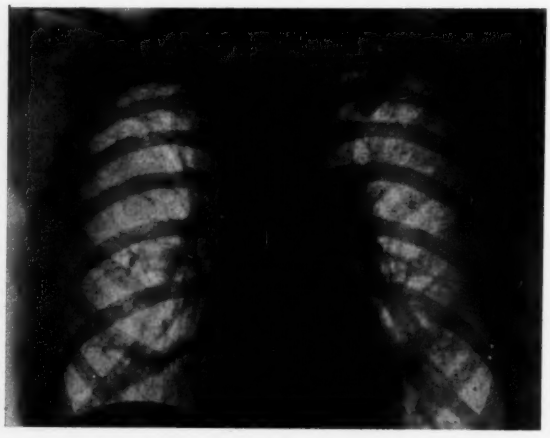
CASE No. 22. G.P. (Fig. 3-A.) Preoperative roentgenogram of 24th April 1935. Chronic pulmonary tuberculosis of productive form with large infraclavicular cavity on the left side.



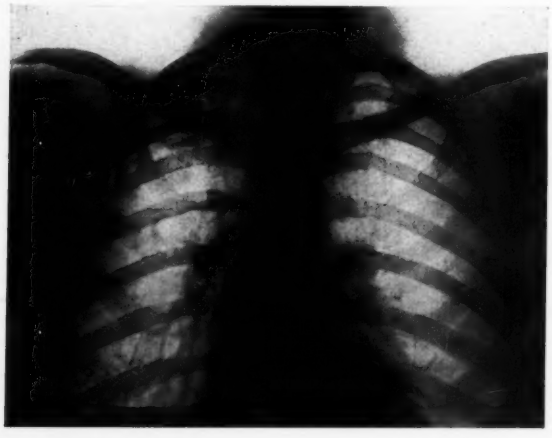
CASE No. 22. G. P. (Fig. 3-B.) Roentgenogram, 4 months after the operation of phrenico-exeresis and total anterolateral thoracoplasty. Complete healing of the cavity.



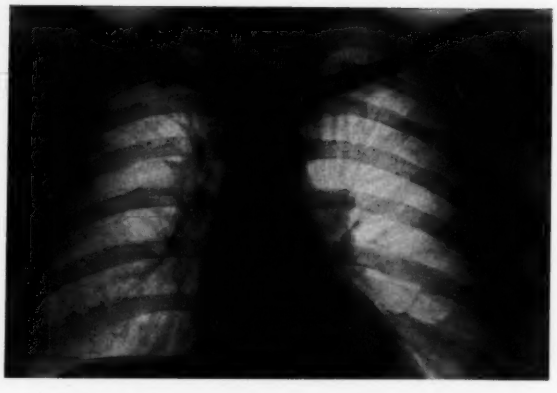
CASE No. 23. B. A. (Fig. 4-A.) Pre-operative roentgenogram. Large infraclavicular cavity on the right side.



CASE No. 23. B. A. (Fig. 4-B.) Post operative roentgenogram. Crushing of the phrenic nerve, anterolateral thoracoplasty (three ribs). Total elision in 8 months.



CASE No. 46. F. E. (Fig. 5-A.) Pre-operative roentgenogram. Large infraclavicular cavity and another isolated parahilar cavity on the right side.



CASE No. 46. F. E. (Fig. 5-B.) Post-operative roentgenogram. Both cavities are healed up. It took about 15 months.

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superior type of antero-lateral thoracoplasty with resection of first four ribs. Rapid improvement in the general condition. Reduction and deformation of the cavity. Total elision of the cavity in 1½ months.

Case No. 13. D. C. Lionello, aged 51 years. First clinical signs of the disease in 1928. In December, 1932, phrenico-exeresis on the left side. On admission: Febrile state. Marked toxæmia, large apical and subapical cavities on the left side.

On the 7th and 13th November, 1933. Total antero-lateral thoracoplasty with resection of the ribs from II to VIII. Post-operative course normal. Scarce modification in the volume and appearance of the cavity. After two months patient left the Institute. Again admitted on the 14th May, 1935. On the 10th June, 1935, Proust-Maurer posterior thoracoplasty with the resection of first five ribs.

Case No. 14. R. Armando, aged 35 years. Onset of the disease in 1929 with hæmoptysis and high fever. Admitted in the Carlo Forlanini Institute with fibrocavitary lesions of the left lung with large infraclavicular cavity. In 1932, phrenico-exeresis on the left side. On the 7th June, 1933, antero-lateral thoracoplasty with the resection of I to VI ribs. Post-operative course normal. Improvement in the general condition. Slight reduction in the volume of the cavity. A small cavitary residue persists.

Case No. 15. T. Giusellina, aged 31 years. In February, 1926, pleurisy with effusion on the right side. First clinical signs of the disease in April, 1933. Was admitted in the Institute in June, 1933 with the diagnosis of, "Large cavity infraclavicular stretched longitudinally. Homolateral nodular dissemination in the middle thorax."

In June, 1933, phrenico-exeresis and scaleniotomy on the right side. On the 10th and 18th October, 1933, total antero-lateral thoracoplasty on the left side. Post-operative course normal. Improvement in the general condition. Diminution of the cavity. A cavitary residue persists. General condition good.

Case No. 16. M. Nicola, aged 25 years. Onset of the disease in April, 1932. In May A. P. associated with phrenico-exeresis on the left side. Was admitted in the Institute in October, 1933 with lateral basilar pneumothorax on the left. Multiple cavities in the upper lobe. Inactive micronodular lesions on the right. Marked toxæmia. On the 8th November, 1933. Superior type of antero-lateral thoracoplasty with the resection of first five ribs. Post-operative course normal. Improvement in the general condition. Progressive diminution in the volume of the apical cavity. But the patient died after 8 months on account of evolution of the lesions on the other side.

Case No. 17. A. Luigi, aged 30 years. First clinical signs of the disease in 1929 with recurrent hæmoptysis. Entered in the Institute with the diagnosis of, "Multiple cavities of various sizes in the apical-subapical regions on the left side." Temperature febrile, marked toxæmia. On the 6th and 28th December, 1933, phrenico-exeresis and total antero-lateral thoracoplasty. Rapid disintoxication. Deformation and diminution in the size of the cavity. Progressive reduction of the cavity. After two months the patient left the Institute.

Case No. 18. B. Primo, aged 41 years. First clinical signs of the disease in 1928. In 1931 A. P. on the right side. Abandoned afterwards on account of effusion. In October, 1931 phrenico-exeresis on the right side. Admitted in the Institute with the diagnosis of, "Cirrhotic phthisis with subapical cavity. Pyopneumothorax on the right side." Discrete general condition. Slight impoverishment. On 28th March and 9th April, 1934, total antero-lateral thoracoplasty with resection of I to VII ribs. Improvement in the general condition and reduction of the cavity. Total elision of the cavity in 7 months.

Case No. 19. P. Antonio, aged 34 years. In 1922 exudative pleurisy on the left side. From 1923 repeated hæmoptysis. Was admitted in the Institute with the diagnosis of, "Pulmonary tuberculosis under the form of fibrothorax with a large infraclavicular cavity on the left side. Homolateral nodular dissemination." Notable wasting. Temperature subfebrile. On the 18th and 27th July, 1934, phrenico-exeresis and superior type of antero-lateral thoracoplasty with the resection of ribs from I to IV. Improvement in the general condition. Deformation and diminution in the size of the cavity. Total elision after 6 months.

Case No. 20. C. Umberto, aged 22 years. First clinical signs of the disease in May, 1931. On the 5th August, 1931 A. P. on the left side. It was inefficient and complicated with effusion first serous and then purulent. Admitted with the diagnosis of "Lateral basilar pyopneumothorax on the left side. Apical adhesion with large cavity." Temperature febrile, much depression. On the 20th September, 1934, antero-lateral thoracoplasty with the resection of first three ribs. Immediate diminution in the size of the cavity and modification in the appearance. Total elision of the cavity in three months.

Case No. 21. B. Paolo, aged 36 years. In 1924 dry pleurisy on the left side. In 1930 hæmoptysis. Was admitted in the Institute with the diagnosis of, "Apical sclerosis with infraclavicular cavity on the left side. Homolateral micro-nodular diffusion." General condition good. On the 18th and 25th July, 1935, phrenico-exeresis and total antero-lateral thoracoplasty, with resection of the I to V ribs. Improvement in the general condition. Reduction and notable deformation of the cavity. Total elision of the cavity in two months.

Case No. 22. G. Pilade, aged 41 years. First clinical signs of the disease in 1915. From that time recurrent hæmoptysis. Admitted in the Institute in April, 1935 with the diagnosis of, "Chronic pulmonary tuberculosis of productive form with a large infraclavicular cavity on the left side." General condition discrete. On the 8th and 17th May, 1935, phrenico-exeresis and total antero-lateral thoracoplasty with resection of the ribs from I to VI. Post-operative course normal. Rapid improvement in the general condition. Reduction in the volume and notable modification in the appearance of the cavity. Total elision of the cavity in 7 months.

Case No. 23. B. Antonio, aged 23 years. First clinical signs of the disease in 1932. In September, 1932 repeated hæmoptysis. In 1933, A. P. which was abandoned after 1½ months as it was inefficient. Was admitted in the Institute on the 7th May, 1935 with the diagnosis of "Large infraclavicular cavity stretched laterally." Marked wasting, febrile state, distinct toxæmia. On the 3rd June, 1935 phrenico-exeresis and superior type of antero-lateral thoracoplasty with resection of first three ribs. After the operation notable improvement in the general condition and deformation of the cavity. Total elision of the cavity in 8 months.

Case No. 24. D. P. Antonio, aged 21 years. Onset of the disease in June, 1933 with hæmoptysis. In July, 1933, A. P. on the right side which was inefficient and complicated with empyema. Was admitted in the Institute on the 21st May, 1935 with the diagnosis of, "Pyopneumothorax on the right side with the persistent large infraclavicular cavity." Displacement of trachea and mediastinum. Homolateral nodular dissemination. Another apical cavity on the left side. Temperature febrile and progressive wasting.

On the 27th June, 1935. Phrenico-exeresis and superior type of antero-lateral thoracoplasty with resection of the first three ribs. For empyema treatment with progressive detension and lavage. Slight deformation of the cavity. The patient died on account of the evolution of the lesions in the other lung.

Case No. 25. C. Maria, aged 38 years. In 1931 exudative pleurisy on the left side. First clinical signs of the disease in April, 1935. Was admitted in the Institute on the 1st August, 1935. Temperature febrile and notable impoverishment. On the left: large infraclavicular cavity. Another in the middle. Acino-nodular dissemination of the right middle lung. On the 2nd November, 1935, superior type of antero-lateral thoracoplasty with resection of the first three ribs. On the 13th August, 1935, A. P. was done on the left side. After the operation reduction and modification of the cavity. Cavitary residue remained. In March, 1936, posterior thoracoplasty of Sauerbruch was done with resection of the ribs from II to VI.

Case No. 26. M. Raffaele, aged 42 years. Onset of the disease in March, 1933 with hæmoptysis. Entered in the Institute on the 26th August, 1935. Multiple small cavities with apical cirrhosis on the right. Oval cavity under the clavicle. Marked wasting. On the 9th October, 1935. phrenico-exeresis and superior type of antero-lateral thoracoplasty on the right with the resection of first three ribs. After the operation improvement in the general condition. Deformation and reduction in the volume of the cavity. Complete healing of the cavity in March, 1936 (in five months).

Case No. 27. R. Maria, aged 21 years. First clinical signs of the disease in 1932. In 1934, phrenico-exeresis on the left side. Temperature febrile. Marked wasting. Locally large infraclavicular cavity. Osseous lesion in the right foot. On 20th May, 1935 superior type of antero-lateral thoracoplasty with resection of the first three ribs. After the operation improvement of the osseous lesions and the general condition. The cavity is also much reduced in size. Afterwards small residuum. The patient died of miliary diffusion.

Case No. 28. M. Domenico, aged 23 years. Onset of the disease in August, 1931 with hæmoptysis. In March, 1933, phrenico-exeresis on the left side. Was admitted in the Institute with the diagnosis of, "Apical and subapical dense fibrosis with two cavities under the left clavicle. Notable mediastinal displacement." General condition discrete. On the 5th July, 1935 superior type of antero-lateral thoracoplasty with resection of the first three ribs. After the operation improvement in the general condition. Small reduction in the volume of the cavity. Total elision of the cavity in 8 months.

Case No. 29. O. Anna, aged 24 years. First clinical signs of the disease in June, 1934. In August, 1934, phrenico-exeresis on the right side. In November, 1934, hæmoptysis. Was admitted in the Institute on the 12th November, 1935, with the diagnosis of "Large infraclavicular cavity, stretched obliquely, laterally and downwards. On the 27th November and 6th December, 1935—total antero-lateral thoracoplasty. Improvement in the general condition. Modification in the appearance and reduction in the volume of the cavity. Complete clinical cure in a year.

Case No. 30: M. Adolfo, aged 22 years. First clinical signs of the disease in 1929. From 1933 sanatorial life. Was admitted in the Institute in November, 1935. Temperature subfebrile. General condition discrete. Locally apical and subapical chronic cirrhotic pulmonary tuberculosis with multiple small cavities of the various sizes under the right clavicle. On the 22nd November, 1935, superior type of antero-lateral thoracoplasty with the resection of the first three ribs. Improvement in the general condition. Complete healing in a year.

Case No. 31. O. Domenico, aged 47 years. First clinical signs in 1927. In May, 1935, period of acute attack. On the 5th November, 1935, admitted in the Institute with the diagnosis of "Cirrhotic phthisis of the right upper lobe with multiple cavities of various sizes." On the 9th December, 1935, phrenico-exeresis and superior type of antero-lateral thoracoplasty with the resection of the first three ribs. Rapid disintoxication and improvement in the general and local conditions. Complete healing in four months.

Case No. 32. G. Libero, aged 30 years. First clinical signs of the disease in 1932, from that time repeated hæmoptysis. In November, 1934, phrenico-exeresis on the right. Was admitted in the Institute on the 12th January, 1936. General condition discrete, afebrile. Irregular infraclavicular cavity on the right side. On the 5th and 17th February, 1936: total antero-lateral thoracoplasty with the resection of the ribs from I to VII. Reduction in the volume and deformation of the cavity. Total elision of the cavity in 2 months after the operation.

Case No. 33. D. F. Virginia, aged 26 years. Onset of the disease in December, 1932 with hæmoptysis. Was admitted in the Institute on the 25th October, 1935. On

the right large infraclavicular cavity stretched laterally. Homolateral dissemination and in part nodular confluent Temperature febrile and marked wasting. On the 24th February, and 9th March, 1936, phrenicofrassi and total antero-lateral thoracoplasty. After the operation sensible improvement in the general condition. First the cavity is displaced medially and then deformed and reduced in volume. A small residue of the cavity still remains.

Case No. 34: B. Germano, aged 23 years. First clinical signs of the disease in 1931. In November, 1932, phrenico-exeresis on the right side. Repeated hæmoptysis. Was admitted in the Institute on the 25th September, 1935, with the diagnosis of "Dense fibrous tuberculosis of the apical and subapical regions of the right with multiple cavities. Nodular diffusion, diaphragm elevated." On the 27th July, 1936: Superior type of antero-lateral thoracoplasty. Improvement in the general condition and local as well. Complete healing with the clearing of the zones in 5 months.

Case No. 35. V. Annunziata, aged 16 years. First clinical signs of the disease in 1931. Admitted in the Institute on the 3rd August, 1936, with general condition discrete. Locally on the left side round infraclavicular cavity, surrounded by the parenchyma which is in part sclerotic. On the 30th February, 1936: Superior type of antero-lateral thoracoplasty with resection of the first three ribs. After the operation improvement in the general condition and rapid diminution of the cavity. Total elision of the cavity in two months.

Case No. 36. B. Regina, aged 34 years. First clinical signs of the disease in March, 1936. History of syphilis. Was admitted in the Institute on the 23rd October, 1936, with the diagnosis of, "Infraclavicular cavity on the left side. Confluent micronodular diffusion at the base. Marked toxæmia." On the 9th December, 1936, and 19th January, 1937: Phrenico-exeresis and total antero-lateral thoracoplasty with the resection of the ribs from I to VII. Post-operative course normal. Moderate diminution in the volume of the cavity. After the cavity diminished remarkably, it became enlarged again. In April, 1937: Posterior Proust-Maurer thoracoplasty with resection of the ribs from II to IV.

Case No. 37. A. Lucia, aged 44 years. In 1929, exudative pleurisy on the left side. First clinical signs of the disease in August, 1934, during the 5th pregnancy. In March, 1935: Phrenico-exeresis on the right side. Was admitted in the Institute on the 23rd December, 1936, with multiple cavities of various sizes in the apical and subapical regions on the right side. On the 22nd January, 1937: Superior type of antero-lateral thoracoplasty. Post-operative course normal. Rapid regression of the lesions. Complete clinical cure after 2 months of the operation.

Case No. 38. D. Donato, aged 33 years. First clinical signs of the disease in September, 1934. In October, 1934: A. P. on the right side. Was admitted in the Institute in September, 1935, with the diagnosis of "Lateral basilar pneumothorax on the right side. Apex adherent with large cavity under the clavicle." Marked toxæmia and notable wasting. On the 25th October, 1935: Phrenico-exeresis and superior type of antero-lateral thoracoplasty with the resection of first three ribs. Rapid diminution of the cavity. Total elision of the cavity in 4 months.

Case No. 39. M. Salvatore, aged 26 years. First clinical signs of the disease in December, 1929. Sanatorium life from January, 1932. From that time recurrent hæmoptysis. Was admitted in the Institute in September, 1934, with the diagnosis of "Large infraclavicular cavity on the left side. Apical sclerosis on the right." General condition run down. On the 3rd October, and 15th October, 1934: Phrenico-exeresis and total antero-lateral thoracoplasty. Improvement in the general condition. The cavity modified and reduced in volume. Total elision of the cavity in five months.

Case No. 40. S. Saverio, aged 30 years. First clinical signs of the disease in October, 1926. In May, 1934, A. P. on the right side. Before the operation the patient had, "Lateral basilar hydropneumothorax on the right side. Upper half of the lung was adherent. Infraclavicular cavern stretched longitudinally." On the 21st October, 1935—superior type of anterolateral thoracoplasty with the resection of first three ribs. After the operation the cavity modified and reduced in volume. Total elision of the cavity after five months of the operation.

Case No. 41. L. Guglichno, aged 34 years. First clinical signs of the disease in 1925 with hæmoptysis. In 1930, A. P. on the right side which was inefficient and abandoned on account of empyema. On the 2nd October, 1934: Phrenico-exeresis on the right side. Before the operation "Fibrothorax with infraclavicular cavity." On the 25th and 29th March, 1935—Total anterolateral thoracoplasty with resection of the ribs from I to VI. Marked improvement in the general condition and slight diminution of the cavity. Persistent residual cavity for which posterior Proust-Maurer thoracoplasty was done.

Case No. 42. M. Giovanni, aged 35 years. First clinical signs in February, 1932, was admitted in the Institute on the 6th June, 1932, with the diagnosis of "Large infraclavicular cavity on the right side with surrounding small cavities. Homo and contralateral nodular diffusion." On the 19th October, and 7th November, 1932: total anterolateral thoracoplasty and apicolysis. After the apicolysis and superior type of anterolateral thoracoplasty, the patient developed basilar broncho-pneumonia which cleared up after the inferior type of the anterolateral thoracoplasty. The cavity reduced and modified. Afterwards small cavitary residue. Transferred to another Sanatorium.

Case No. 43. Giuseppina, aged 28 years. Onset of the disease in July, 1934, with the pseudo-influenzal syndrome. On the 2nd November, 1934, phrenico-exeresis on the left side. Was admitted in the Institute in September, 1935, with the diagnosis of "Apical-subapical consolidation on the left side with a cavity under the clavicle. Homolateral nodular dissemination." On the 30th September, 1935: superior type of antero-lateral thoracoplasty with the resection of first three ribs. After the operation the cavity is reduced. displaced and modified. Afterwards notable diminution of the cavity.

Case No. 44. T. Angelo, aged 26 years. First clinical signs of the disease in 1930. From May, 1931 to September, 1933, A. P. on the right side. In December, 1934: Phrenico-exeresis on the right side. Was admitted in the Institute on the 12th August, 1936, with the diagnosis of "Supraclavicular cavity on the right side." On the 11th September, 1936: Superior type of anterolateral thoracoplasty with the resection of first three ribs. General improvement and diminution in the size of the cavity. Total elision of the cavity in 4 months.

Case No. 45. S. Salvatore, aged 25 years. First clinical signs of the disease in 1931. In February, 1934: Phrenico-exeresis and simple apicolysis on the left side. Was admitted in the Institute with the diagnosis of "Multiple cavities in the left apical and subapical regions. On the 14th November, 1934: superior type of anterolateral thoracocoplasty. Reduction in the volume of the cavity. Total elision of the cavity in 4 months.

GROUP III—OLD CAVITARY LESIONS THAT ARE SURROUNDED BY HEALTHY LUNG TISSUE

Case No. 46. F. Enrico, aged 25 years. Onset of the disease in 1926 with hæmoptysis. In June, 1931: Phrenico-exeresis on the right side. Was admitted in the Institute in August, 1931, with the diagnosis of "Large infraclavicular cavity and another isolated parahilar cavity on the right side." General condition good. Hæmoptoic state. On the 21st and 29th October, 1932: total anterolateral thoracoplasty. Hæmoptysis arrested. Conspicuous variations in the appearance and reduction in the volume of the cavity. Complete clinical cure in 15 months.

Case No. 47. B. Zaira, aged 28 years. First clinical signs in October, 1933. In March, 1934: Phrenico-exeresis on the left side. On 1st September, 1934 admitted in the Institute with the diagnosis of "Large infraclavicular cavity on the left side." General condition discrete. On 24th September, 1934: Superior type of anterolateral thoracoplasty with resection of the first four ribs. Post-operative course normal. Improvement in the general condition. Notable reduction in the volume of the cavity. Total elision of the cavity in 6 months.

Case No. 48. P. Domenica, aged 24 years. First clinical signs of the disease in September, 1933. In November, 1933: A. P. Was admitted in the Institute on the 15th April, 1934 with the diagnosis of "Apical cavity and lateral-basilar pneumothorax on the left." Temperature subfebrile and marked wasting. On the 16th July, 1934: Crushing of the phrenic nerve and superior type of antero-lateral thoracoplasty with the resection of the first three ribs. Notable reduction of the cavity with improvement in the general condition. Total elision in 50 days.

Case No. 49. P. Pietro, aged 45 years. First clinical signs of the disease in 1926. Admitted in the Institute on the 20th November, 1934, with the diagnosis of "Extensive ulcero-cavernous lesions of the right lung with a large infraclavicular cavity and broncho-pneumonic diffusion with a liquefying tendency in the inferior half." On the 18th February and 4th March, 1935: Phrenico-exeresis and total anterolateral thoracoplasty with resection of the ribs from I—VII. Post-operative course uneventful. Fair recovery. Rapid disintoxication. After inferior type the cavity modified and reduced in volume. More evident modification after the superior type. Total elision in 7 months. On the 16th November, 1935, discharged clinically cured.

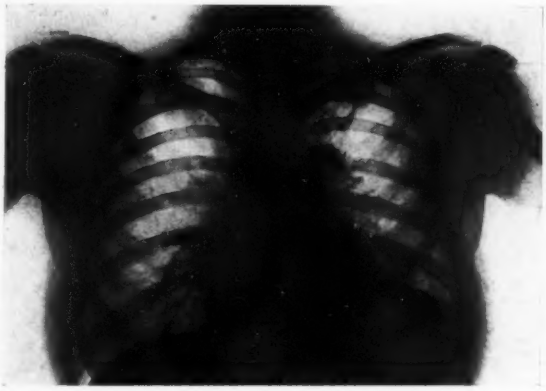
Case No. 50. M. Riccardo, aged 30 years. First clinical signs in 1933. In March, 1934: Phrenico-exeresis on the right side. Was admitted in Quisisana Clinic with the diagnosis of "Diffuse fibrocavitary tuberculosis on the right side with apical subapical cavity stretched longitudinally. Homolateral nodular diffusion." Hæmoptoic tendency. Chronic toxæmia with subfebrile temperature. On the 15th and 25th February, 1935: total anterolateral thoracoplasty. Post-operative course is complicated with caseous bronchopneumonia. Notable reduction of the cavity. Complete cure in two months of the operation. Employed at present and working 8 hours per day.

Case No. 51. M. Giuseppe, aged 22 years. First clinical signs of the disease in 1932. In November, 1932: Phrenico-exeresis on the left side. In May, 1933, hæmoptysis. In February, 1934 A. P. on the left side. Was admitted in the Institute on the 15th April, 1935, with the diagnosis of "Large infraclavicular cavity on the left side which is stretched longitudinally." General condition much depressed. On the 24th April, 1935: Superior type of anterolateral thoracoplasty with the resection of first three ribs. Rapid modification in the appearance of the cavity and improvement in the general condition. Total elision of the cavity after 8 months of the operation. In November, 1935 A. P. for the contralateral lesions.

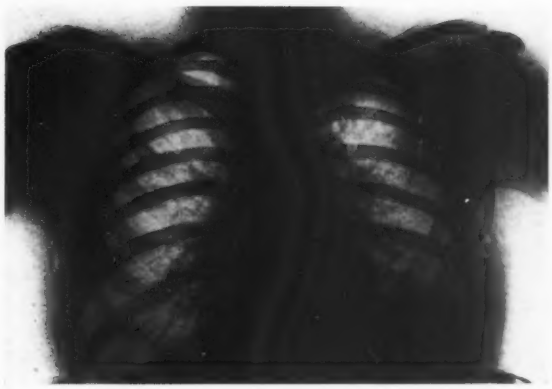
Case No. 52. M. Ida, aged 22 years. First clinical signs of the disease in April, 1932, with abundant hæmoptysis. In June, 1932, A. P. on the right side, abandoned after a year on account of effusion. Was admitted in the Institute on the 9th May, 1935, with the diagnosis of "Isolated infraclavicular cavity on the right side." On the 14th June, 1935: Phrenico-exeresis and superior type of anterolateral thoracoplasty. Notable and rapid reduction in the volume of the cavity. Total elision in 4 months.

Case No. 53. F. Camillo, aged 24 years. First clinical signs of the disease in 1932. In October, 1932, A. P. on the left side. It was inefficient and complicated with effusion first serous and then pus. Was admitted in the Institute on the 30th April, 1935, with the diagnosis of "Lateral basilar pyopneumothorax on the left. Adherent with infraclavicular cavity." Marked wasting. On the 6th May, 1935: Phrenico-exeresis on the left side. On the 20th June, 1935, superior type of antero-lateral thoracoplasty with the resection of first three ribs. The empyema was treated with progressive detension and lavage. Discrete improvement in the general condition. Diminution and modification of the cavity. Total elision in three months.

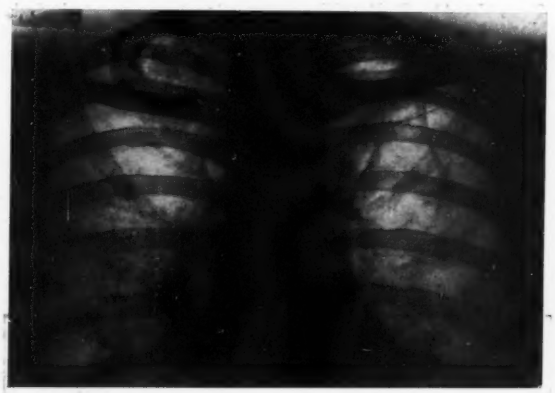
Case No. 54. G. Filomina, aged 25 years. First clinical signs in June, 1934. In June, 1935, A. P., abandoned after



CASE No. 47. B. Z. (Fig. 6-A.) Pre-operative roentgenogram. Large infraclavicular cavity on the left side.

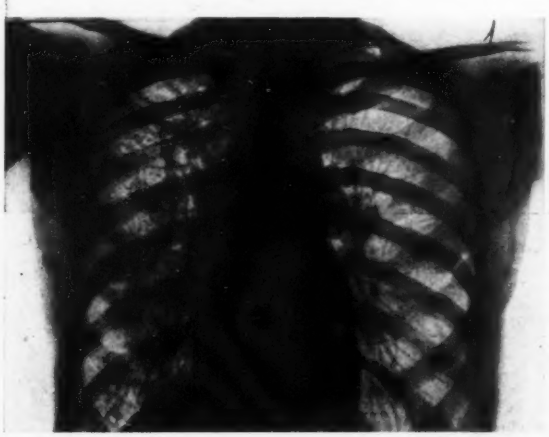


CASE No. 47. B. Z. (Fig. 6-B.) Roentgenogram of 17th April 1935, after the anterolateral thoracoplasty operation (first 4 ribs). Total elision of the cavity in 6 months.

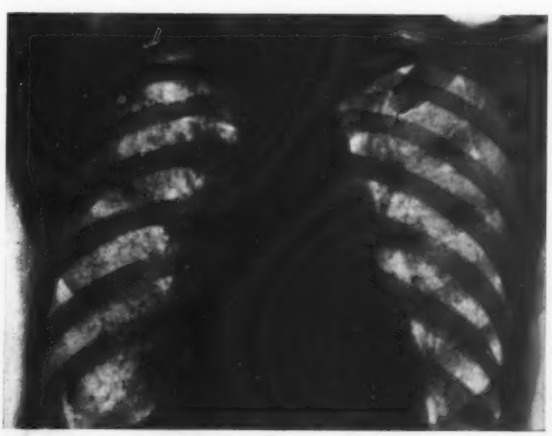


CASE No. 48. P. D. (Fig. 7-A.) Pre-operative roentgenogram of 24th June 1934. Large apical cavity. Lateral basilar pneumothorax (left side).

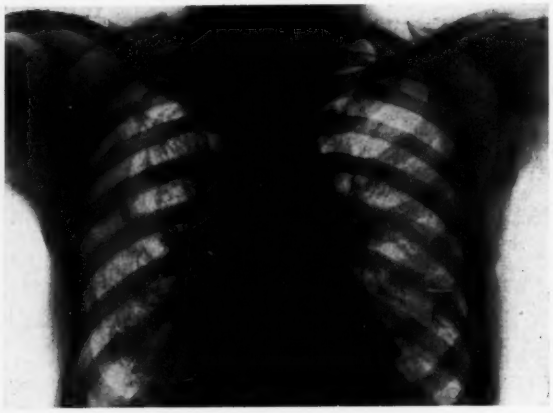
CASE No. 48. P. D. (Fig. 7-B.) Two months after the operation of phrenico-exeresis and the superior type of anterolateral thoracoplasty (3 ribs removed). Cavity healed.



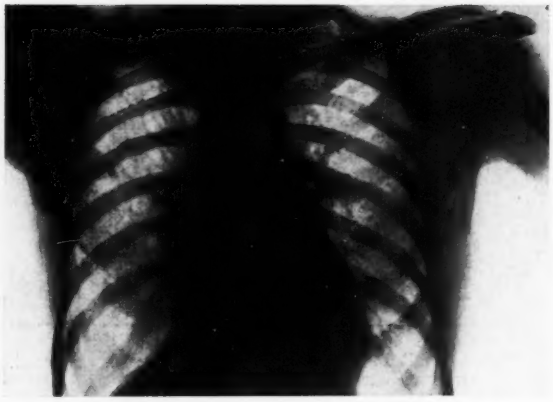
CASE No. 49. P. P. (Fig. 8-A.) Pre-operative roentgenogram. Big infraclavicular cavity and bronchopneumonic diffusion with a liquefying tendency in the inferior half of the right side.



CASE No. 49. P. P. (Fig. 8-B.) Post-operative roentgenogram, 4th July 1935, after the total anterolateral thoracoplasty (7 ribs removed).



CASE No. 49. P. P. (Fig. 8-C.) 29th August 1935. Five months after the operation. Cavity healed up.



CASE No. 49. P. P. (Fig. 8-D.) Roentgenogram of 2nd November 1935. Complete elision of the cavity in seven months. Sputum negative since August 1935.

CASE No. 84. M. L. (Fig. 9-A.) Pre-operative roentgenogram. Large infraclavicular cavity on the right side. This is 9 days after the phrenico-exeresis operation. The cavity is displaced upwards.

CASE No. 84. M. L. (Fig. 9-B.) Two months after the operation of anterolateral thoracoplasty (total). The cavity healed up.

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4 months on account of effusion. Was admitted in the Institute on the 5th February, 1936, with the diagnosis of "Large infraclavicular cavity. Homo and contralateral nodular diffusion. Condition much run down." On 20th February, 1936: Superior type of anterolateral thoracoplasty with resection of first three ribs. Notable repression of the general condition. Diminution and modification of the cavity. Complete healing in three months.

Case No. 55. R. Maria, aged 29 years. In February, 1930 dry pleurisy. In September, 1930, hæmoptysis. In February, 1936 again hæmoptysis. Was admitted in the Institute on the 25th April, 1936, with the diagnosis of "Large infraclavicular cavity on the left side." Subfebrile temperature. Marked wasting. On the 8th June and 26th June, 1936: Total anterolateral thoracoplasty. Post-operative course normal. Rapid improvement in the general condition. Complete healing of the cavity in five months.

Case No. 56. P. Nicola, aged 35 years. First clinical signs of the disease in December, 1934 with hæmoptysis. In January, 1935, A. P. on the right side. In December, 1936, phrenico-exeresis on the right side. Was admitted in the Institute on 3rd June, 1936, with the diagnosis of "Solitary supraclavicular cavity in the right apex." On the 13th September, 1936: Superior type of anterolateral thoracoplasty with the resection of first two ribs and simple apicolysis. Reduction and modification of the cavity. Total elision of the cavity in 4 months.

Case No. 57. C. Maria, aged 25 years. First clinical signs of the disease in February, 1935. On the 21st March, 1936, phrenico-exeresis on the left side. Was admitted in the Institute on the 20th January, 1937 with apical subapical cavity on the left side. On the 1st February, 1937: Inferior type of antero-lateral thoracoplasty with resection of the ribs from 3rd to fifth. On the 12th February, 1937. First two ribs. Total elision of the cavity in 2½ months.

Case No. 58. D. Gemma, aged 33 years. First clinical signs in 1932. On the 9th May, 1935, phrenico-exeresis on the left side. Was admitted in the Institute on the 19th February, 1937 with irregular cavity under the clavicle. Slight wasting. On the 26th February, 1937, superior type of antero-lateral thoracoplasty. Notable diminution of the cavity. Total elision in two months.

GROUP IV—RECENT CAVERNS SURROUNDED BY INFILTRATED TISSUE

Case No. 59. P. Ernesta, aged 25 years. First clinical signs in June, 1933. Was admitted in the Institute with the diagnosis of "Infraclavicular cavity on the right side. Homolateral micronodular diffusion. Marked wasting, temperature febrile." On the 13th and 20th November, 1933: Total antero-lateral thoracoplasty with the resection of the ribs from I—VII. Improvement in the general condition. Clearing of the infiltrated zones. Diminution of the cavity. Complete elision in five months. Discharged August, 1934.

Case No. 60. G. Orlandina, aged 32 years. First clinical signs of the disease in February, 1934, with exudative pleurisy on the left side. Was admitted in the Institute with the diagnosis of "Left upper lobe consolidation with subclavicular cavity." On the 26th June and 5th July, 1935: Phrenico-exeresis and total anterolateral thoracoplasty. Reduction and modification of the cavity. Improvement in the general condition. Complete clinical cure in 6 months.

Case No. 61. D. Giuseppina, aged 28 years. Onset of the disease in 1934 with pseudo-influenzal syndrome. In June, 1935, hæmoptysis. Was admitted in the Institute on the 9th October, 1935. Great toxæmic condition. Infraclavicular cavity stretched towards the apex. Acino-nodular diffusion in the middle right lung. On 11th November, 1935: Phrenico-exeresis and superior type of anterolateral thoracoplasty. No evident modification. Volume of the cavity is increased. On the 18th March, 1936: Posterior thoracoplasty of Proust-Maurer with resection of II to VI ribs.

Case No. 62. S. Pierina, aged 29 years. First clinical signs of the disease in 1930 with hæmoptysis. Was admitted in the Institute on the 14th March, 1936. General condition much deteriorated. Temperature subfebrile. Locally, cavity under the right clavicle. Contralateral nodular diffusion. On the 23rd March and 15th April, 1936: Crushing of the phrenic nerve and total antero-lateral thoracoplasty. Displacement and slight deformation with diminution in the volume of the cavity. Afterwards the volume of the cavity is enlarged.

Case No. 63. S. Addolorata, aged 27 years. In 1927 exudative pleurisy on the right. First clinical signs in February, 1934. Was admitted in the Institute on the 17th October, 1934. Temperature subfebrile. Notable wasting. Infraclavicular cavity. Laryngeal tuberculosis. On the 18th November, 1934: Crushing of the phrenic nerve and superior type of antero-lateral thoracoplasty. Reduction in the volume of the cavity. Clearing away of the infiltrated zones. Improvement in the general condition. Total elision of the cavity in a year.

Case No. 64. D. B. Romolo, aged 30 years. First clinical signs of the disease in October, 1935, pseudo-influenzal syndrome. Was admitted in the Institute on the 28th November, 1935, with the diagnosis of "Large infraclavicular cavity. Homolateral bronchopneumonic diffusion." General condition discrete. On 29th January and 5th February, 1936: Crushing of the phrenic nerve and total anterolateral thoracoplasty. Slight deformation and diminution in the size of the cavity. Complete cure after a long time.

Case No. 65. M. Valeria, aged 21 years. First clinical signs of the disease in May, 1935. On 13th September, 1935: Phrenico-exeresis on the left side. Was admitted in the Institute in March, 1936. Much run down in general condition. Temperature febrile. On the left side two cavities, apical and subapical. Homolateral acino-nodular diffusion. On the 11th March and 3rd April, 1936: Total anterolateral thoracoplasty. Slight modification of the cavities. Afterwards unchanged condition.

Case No. 66. P. Maria, aged 22 years. In 1931 exudative pleurisy on the right side. In March, 1935 hæmoptysis.

In October, 1935: Phrenico-exeresis on the right side. On admission marked toxæmia. Large apical cavity on the right side. Another small one under the clavicle. Homolateral acino-nodular diffusion. Right hemidiaphragm elevated. On the 16th March and 3rd April, 1936: Total anterolateral thoracoplasty. Displacement of the cavity which reduced in volume. Elision of the cavity which was under the clavicle. Persistence of the residuum of the other cavity.

Case No. 67. L. Enrico, aged 33 years. First clinical signs of the disease in April, 1935. Was admitted in the Institute on the 30th January, 1936. Temperature febrile. Marked toxæmia. Progressive wasting. On the left side: Opacity of the apical and subapical regions with large infraclavicular cavity. Homolateral nodular diffusion. On the 25th March and 30th April, 1936: Phrenico-exeresis and total anterolateral thoracoplasty with the resection of the ribs from I—VII. Repression in the general condition. Diminution in the volume of the cavity. Complete elision of the cavity in a year.

Case No. 68. D. O. Giovanni, aged 33 years. First clinical signs of the disease in March, 1936 with pseudo-influenzal affection. Was admitted in the Institute on the 17th April, 1936, with large subclavicular cavity on the left side. Homo and contralateral acino-nodular diffusion. High fever and marked toxæmia. On the 13th May and 8th June, 1936: Phrenico-exeresis and total anterolateral thoracoplasty. After the operation rapid and notable improvement in the general condition. Deformation and diminution in the volume of the cavity. Total elision of the cavity after a year.

Case No. 69. R. Maria, aged 24 years. First clinical signs of the disease in October, 1933. In August, 1934: hæmoptysis. Was admitted in the Institute in July, 1935, with large infraclavicular cavity on the right side. Homolateral bronchopneumonic diffusion. Temperature febrile and marked wasting. On the 9th and 23rd October, 1935, phrenico-exeresis and total anterolateral thoracoplasty. Slight deformation of the cavity. Afterwards enlargement of the cavity on account of the confluence of the other small cavities.

Case No. 70. S. Pasquale, aged 25 years. Onset of the disease in July, 1936, with hæmoptysis. Was admitted in the Institute on the 19th August, 1936. Much run down in general condition. Subapical cavity on the left. Homolateral nodular diffusion. On the 28th August, 1936: Phrenico-exeresis on the left side. On the 19th and 30th October, 1936: Total anterolateral thoracoplasty with the resection of the ribs from I—V. After the operation improvement in the general condition. Diminution and modification in the appearance of the cavity. Total elision in 5 months.

Case No. 71. P. Olga, aged 28 years. In 1931 exudative pleurisy on the right side. First clinical signs of the disease in February, 1936. In June, 1936: A. P. which was inefficient. Was admitted in the Institute on the 27th August, 1936, with round infraclavicular cavity and homolateral nodular diffusion. General condition discrete. On the 30th September and 16th October, 1936: Phrenico-exeresis and total anterolateral thoracoplasty on the right side. Reduction in the volume and modification in the cavity. Improvement in the general condition. Total elision in 4 months. Discharged on the 14th March, 1937.

Case No. 72. P. Giovanni, aged 19 years. First clinical signs of the disease in December, 1935, with pseudo-influenzal syndrome. From April, 1936: A. P. on the right side. Was admitted in the Institute on the 1st April, 1936. Marked toxæmia. Lateral basilar inefficient pneumothorax on the right side. Large infraclavicular cavity. On the 22nd October, 1936, phrenico-exeresis and superior type of anterolateral thoracoplasty. Progressive improvement in the general condition. Deformation and reduction in the size of the cavity. Total elision in 6 months.

Case No. 73. C. Francesco, aged 21 years. First clinical signs of the disease in August, 1931. In November, 1931: A. P. on the right side, continued till the end of 1933. In July, 1935: A. P. on the left side. In July, 1936, mediastinal pneumothorax on account of hæmoptysis. Was admitted in the Institute on the 1st December, 1936. General condition discrete. Infraclavicular cavity and partial pneumothorax on the left side. On the 9th January, 1937: Superior type of anterolateral thoracoplasty. Notable reduction in the volume of the cavity. Total elision in two months.

Case No. 74. E. Maria, aged 42 years. In 1932, exudative pleurisy on the right side. First clinical signs of the disease in July, 1936. On admission temperature subfebrile. Progressive wasting. Large infraclavicular cavity on the right side. Subapical nodular diffusion. On the 29th January and 15th February, 1937: Phrenico-exeresis and total anterolateral thoracoplasty with resection of the ribs from I—V. Improvement in the general condition and reduction in the volume of the cavity. Total elision of the cavity in 4 months.

Case No. 75. C. Giuseppe, aged 20 years. First clinical signs of the disease in April, 1931, with hæmoptysis. In March, 1932: A. P. In April, 1933: Phrenico-exeresis and scaleniotomy on the right side. Was admitted in the Institute on the 22nd September, 1932. General condition discrete. On the right side: Apical and subapical consolidation with a cavity under the clavicle. Homolateral acino-nodular diffusion. On the 29th November, 1933: Superior type of anterolateral thoracoplasty with resection of the ribs from I—IV. Improvement in the general condition. Clearing of the consolidated zones and reduction in the volume of the cavity. Total elision of the cavity after 6 months.

Case No. 76. R. Andrea, aged 20 years. First clinical signs of the disease in August, 1933, with hæmoptysis. Was admitted in the Institute in April, 1935. Much emaciation. Locally on the right infraclavicular cavity. Homolateral nodular dissemination. On the 19th April and 1st May, 1935: Phrenico-exeresis, total anterolateral thoracoplasty with consolidation. Reduction in the volume of the cavity. Total the resection of the ribs from I—VII. Clearing of the elision of the cavity in 8 months.

Case No. 77. P. Iole, aged 23 years. In 1928, exudative pleurisy on the right side. In 1930, exudative pleurisy on

the left side. First clinical signs of the disease in 1932, with hæmoptysis. Was admitted in the Institute in January, 1936. Febrile state. Marked wasting. Locally multiple apical subapical cavities on the left side. Large cavity in the middle lung. On the 15th January, 1936, phrenico-exeresis on the left side. On the 15th February, 1936, superior type of anterolateral thoracoplasty with resection of the first three ribs. Rapid improvement in the general condition. Reduction in the volume of the cavity. Complete clinical cure in 4 months.

Case No. 78. T. Antonino, aged 32 years. First clinical signs of the disease in May, 1936. On the 17th June, 1936, phrenico-exeresis on the right side. Was admitted in the Institute on the 23rd June, 1936. General condition, marked toxæmia. Temperature febrile. Marked wasting. Locally multiple cavities in the infraclavicular regions. Homolateral acino-nodular diffusion. On the 18th September and 2nd October, 1936, total anterolateral thoracoplasty with the resection of the I—VII ribs. Clearing of the infiltrated zones and complete healing of the cavity in 5 months.

Case No. 79. M. Olga, aged 38 years. First clinical signs in August, 1934. Was admitted in the Institute on the 11th June, 1936, with supraclavicular cavity on the right side. Homolateral acino-nodular dissemination. General condition discrete. On the 19th June and 8th July, 1936, phrenico-exeresis ond total anterolateral thoracoplasty with the resection of the ribs from I—VIII. Rapid regression. Modification of the cavity. Elision of the cavity in five months.

Case No. 80. P. Iolanda, aged 33 years. First clinical signs of the disease in June, 1935, with abundant hæmoptysis. Was admitted in the Institute on the 30th August, 1935, with large infraclavicular cavity on the left side. Homolateral acino-nodular diffusion. Temperature febrile, grave toxæmia, marked wasting. On the 19th and 28th September, 1935: Phrenico-exeresis and total anterolateral thoracoplasty with the resection of the ribs from I—VII. Deformation and reduction in the volume of the cavity. The cavity is enlarged on account of ulcerative process on the left apex.

Case No. 81. C. Domenica, aged 25 years. First clinical signs of the disease in May, 1936. In July, 1936: A. P. on the right side. Was admitted in the Institute on 30th June, 1936, with basilar pyopneumothorax and infraclavicular cavity. On the 20th November, 1936 and 8th January, 1937: Phrenico-exeresis and total anterolateral thoracoplasty. After the operation marked improvement in the general condition. Clearing away of the infiltrated zones. Reduction of the cavity. Complete elision of the cavity in two months.

GROUP V—RECENT CAVERNS SURROUNDED BY HEALTHY TISSUE

Case No. 82. B. Olga, aged 23 years. Onset of the disease in May, 1935, with pseudo-influenzal syndrome. In June, 1936: A. P. on the left side. Was admitted in the Institute on 12th December, 1936, with the infraclavicular cavity on the left side. General condition impoverishment. On the 21st December, 1936: Phrenico-exeresis. On the 18th January, 1936: Superior type of anterolateral thoracoplasty. The cavity reduced and deformed. Elision in 2 months.

Case No. 83. N. Antioco, aged 39 years. First clinical signs of the disease in 1933. Was admitted in the Institute on the 17th January, 1934. Much emaciation. On the left, two infraclavicular cavities. On the 19th February, 1934: Phrenico-exeresis on the left side. On the 24th March and 9th April, 1934: Total anterolateral thoracoplasty. Postoperative course normal. Improvement in the general condition. After the operation elision of the small cavity and reduction and deformation of the big cavity. Elision of the cavity in three months.

Case No. 84. M. Letizia, aged 30 years. In 1929, exudative pleurisy on the right side. Onset of the disease in 1932. In August, 1934: Phrenico-exeresis on the right side. Was admitted in the Institute on the 7th July, 1934, with large infraclavicular cavity on the right side. Much wasting. On the 17th December, 1934, and 1st January, 1935: Total anterolateral thoracoplasty with resection of the ribs from I—VII. Deformation and rapid diminution in the volume of the cavity. Elision of the cavity in 2 months.

Case No. 85. B. Ignazio, aged 20 years. Onset of the disease in January, 1935, with pseudo-influenzal syndrome. In May, 1935: A. P. on the left side. It was inefficient. Was admitted in the Institute on the 26th July, 1935, with subclavicular cavity and inefficient pneumothorax. General condition discrete. On the 7th August, 1935: Superior type of anterolateral thoracoplasty with the resection of first three ribs. Reduction in the volume of the cavity. Total elision of the cavity in 6 months.

Case No. 86. I. Lorenzo, aged 19 years. In 1933, exudative pleurisy on the right side with pulmonary manifestations. A. P. on the right side. Was admitted in the Institute on the 10th August, 1936, with subclavicular cavity on the left and pyopneumothorax on the right side. On the 16th November, 1936: Phrenico-exeresis and superior type of anterolateral thoracoplasty. Rapid deformation and reduction of the cavity. Elision of the cavity in 2 months.

I divided the cases in five groups:—

In the first group are included the cavities occupying nearly a whole lobe (sublobar); in this group are considered only the dimensions of the cavities. It includes first nine cases, in the greater part of which the lesions are quite old, in a few, however, they are more recent but all of the caverns are of the size of an orange and have only within the cavity, with the exception of the inferior pole, a small area of tissue which is at times infiltrated and at times sclerotic.

In the second group are included the old caverns that are surrounded by cicatricial tissue that is just becoming sclerotic. This group includes 36 cases (from No. 10-45), in all of them is evident a retractive

syndrome which in some cases is extended to the whole hemithorax, but mostly is limited to the upper parts. This retractive syndrome manifests itself with the attraction of the upper part of the mediastinum and with the restriction of the hemithoracic cavity caused by the depression of the wall. In cases with an extended retractive syndrome the diaphragm participates by raising itself higher or by deforming its shape. The size of the cavern is quite different and varies from that of a hazel-nut to that of an orange.

The third group includes the old cavitary lesions that are surrounded by healthy or nearly so lung tissue. This group deals with apical-subapical caverns that are almost isolated and surrounded by a margin that is in some cases very distinct and in some cases not so distinct but which is always very thin, and the surrounding tissue shows in the radiograms an almost normal or somewhat reduced transparency. In some cases in the surrounding areas there can be seen here and there small nodular opacities without any signs of becoming confluent. The age of the lesion was deduced prevalently from the history; in many cases, however, from the radiograms taken at different times. There are 13 patients in this group and in the table they are from No. 46-58.

In the fourth group are gathered the apical-subapical cavitary lesions of a recent date and which are surrounded by infiltrated tissues. The exudation causing the infiltration is generally, in the beginning, of a micronodular nature having a tendency to become confluent with an ulceration already formed or in a process of being formed, more often the infiltration deals with process of a lobar or sublobar type with the cavern already formed. Only in a few cases does this group deal with recent caverns with a moderate surrounding infiltration which resembles somewhat the classic early infiltration. This group includes 23 cases (from No. 59-81).

In the fifth group are included the recent caverns surrounded by healthy lung tissue. Ordinarily these cases derive from the typical precocious (early) infiltration. It includes the last five patients (from No. 82-86).

Out of these cases 46 patients had total anterolateral thoracoplasty on account of the presence of other lesions in the lung besides the apical-subapical cavitary lesions. 40 cases were treated with only the superior type of anterolateral thoracoplasty and phrenico-exeresis or crushing of the phrenic nerve. In 8 cases of superior type of anterolateral thoracoplasty there was no paralysis of the diaphragm.

The results are given in the following table:—

I Group—Sublobar Caverns—9 cases.

Healed		
Improved—2	...	22%
Negative—7	...	78%

II Group—Old Caverns surrounded by cicatricial tissue—36 cases.

Healed—23	...	64%
Improved—10	...	28%
Negative—3	...	8%

III Group—Old Caverns surrounded by healthy tissue—13 cases.

Healed—13	...	100%

IV Group—Recent Caverns surrounded by infiltrated tissue—23 cases.

Healed—15	...	65%
Improved—3	...	13%
Negative—5	...	22%

V Group.—Recent caverns surrounded by healthy tissue—5 cases.

Healed—5	...	100 %

On the whole the results are the following:—

Out of 86 cases, 56 are cured (65%), 15 improved (17·5%) and 15 negative (17·5%).

Discussion

Certain general and particular considerations can be made concerning these results. The great number of patients cured permits us to assert without further doubt that the elastic anterolateral thoracoplasty can present precise indications even in the apical-subapical lesions.

The great disproportion between the positive results and the unsuccessful ones in the various groups makes it necessary to precise the indications in rela-

tion to the type of the lesions and to the conditions of the surrounding pulmonary tissue. The large cavities either old or recent cannot be healed up by this operation. It is not a question to establish whether they are or are not capable of retraction in virtue of the anatomic state of the border of the cavity, much more so since not even those cavities which after the operation had undergone evident modifications of their form or which were partially reduced in size were suppressed, which facts are signs of the possibility of retraction. The reason seems to lie in the fact that the moderate reduction of the hemithoracic cavity determined by the operation at the level of the lesion is insufficient to compensate the space occupied by the cavern. For these lesions it is either necessary to demolish the hemithorax with one of the known types of posterior thoracoplasty, or it is necessary to put into practice the " Velario di Compenso" of Morelli adjusting it to each individual case. At any rate, the aim must be always to compensate by means of the parietal modifications, the large space occupied by the lesion.

In the cavities of the second group 64% of the cases are cured while the unsuccessful ones including also the cases in which there was an amelioration, are 36%. From a broad point of view it can be said that it was not possible to suppress the cavity in those cases in which the surrounding tissue had become cicatricial. Evidently, also in these cases there is an insufficient compensation; the question arises as to whether extending the costal resection can eliminate this inconvenience. Observing some cases in which "Velario di Compenso " was notably enlarged, we believe that this constitutes an important help, but not always does it bring about the total suppression. With all probabilities this is due to the fact that the compensation takes place only in one part and hence it seems wise to experiment on a larger scale the criterion just recently expressed by Morelli to do in similar cases a double "Velario" anterior and posterior, that is by eliminating on the plane of the lesion, the posterior segments of the ribs which represents the support of the remaining cavity after the anterolateral thoracoplasty. There are, it is true, in this group cases in which the cavities do not appear modified at all. These cavities would not even benefit from double "Velario" evidently because they have become anatomically rigid and hence are not susceptible to become suppressed by an operation of a retractive nature. In my statistics, however, the cases are only a few; in fact this was present only in 3 or 8% of the 36 cases.

In the third and fifth groups comprising 13 and 5 cases respectively the cure was had in all the patients. Evidently, the fact that the cavitary lesion is surrounded by healthy pulmonary tissue represents an extremely favourable condition for the success of the operation. I do not intend to explain these brilliant results by maintaining on one side that the border of the cavity by continuing itself into the tissue which is in continual movement, cannot become rigid with cicatricial phenomena and hence the pulmonary lesion is always capable of retraction. Contemporaneously with the parietal compensation determined by the operation, there is also a parenchymal compensation characterized by a progressive distension of the lung tissue as the cavity retracts itself.

In the fourth group there are 65% recoveries and 35% of negative cases. The latter are more frequent in the presence of lobitis. The most probable explanation is that in such cases the respiratory trauma, although it is a factor of great importance, does not represent the greatest part in the persistence and evolution of the process. They are those lesions which are formed on account of the factors which are prevalently biologic and which tend to destroy the pulmonary parenchyma even without the ordinary mechanical action. I do not like to further explain this idea which has been already amply illustrated by Morelli. Nevertheless, in some cases are lacking also the mechanical conditions of the compensation and this because the massively infiltrated tissue cannot easily take the place of the space occupied by the cavity as usually happens when the surrounding tissue is healthy. This was confirmed in those cases in which the healing process was brought about gradually; at first with a clearing up of the infiltrated tissue and only subsequently with the gradual retraction of the cavity.

I would like to add another observation of a general character. The fifth group of my statistics has the least number of operated patients and that is which offers the greatest security of success. This is due to the fact that up to this time it is not considered wise to operate when the lesions are recent.

I must say here that this is an error that must be corrected since now it can be demonstrated in an indisputable manner that it is in these cases that the best success with the minimum sacrifice can be boasted.

Conclusions

As a conclusion of what I have exposed and above all on the basis of the results, it can be securely affirmed that even in the cavitary lesions of the apex and the subapex the elastic anterolateral thoracoplasty finds a vast and very favourable field of application. Naturally, to obtain the better results of the operation it is necessary to take into consideration several essential conditions which must be exactly evaluated in order to avoid eventual failures. Taking into consideration the eminently retractive nature of the operation, two fundamental elements must coexist: the possibility of retraction, which is bound to the anatomic state of the border of the cavity and of the surrounding tissue, and a sufficient quantity of parenchyma which can compensate the entire space occupied by the lesion. The first condition may be lacking in old caverns and which are located at the extreme apex where the scarcity of the movements favours the cicatrization; the second in cases of large caverns that have destroyed vast areas of parenchyma which, moreover, does not have the same possibility, as in other regions, of distending itself to a great extent, since the apex is already very much stretched in physiological conditions. In this case an enlargement of the "Velario di Compenso" of Morelli adjusted to each case can supplant the deficiency of the parenchyma by determining a reduction of the hemithoracic cavity. It is not, however, of sufficient help in determining the suppression of the cavern with a fibrous rigid border. In these cases demolitive operations are necessary.

But both these conditions (large caverns and a state of dense pericavitary sclerosis which represent advanced stages of the disease and constitute the two contra-indications of this operation) are great obstacles for any type of thoracoplasty operation. These conditions would not occur if (as is to be greatly wished for) it would enter into the mind of every phthisiologist the absolute necessity to operate without delay at the right time.

The author wishes to express his gratitude to Honourable Prof. E. Morelli, Director and Prof. V. Monaldi, Vice-Director and Prof. M. Ascoli, the Surgeon of the Carlo Forlanini Institute for their kind permission to study and publish this material. Thanks are especially due to Prof. Ascoli who gave him many chances of doing the operations and to Dr. Guglielmetti for his courtesy and co-operation in the preparation of this paper.*

*From the Carlo Forlanini Institute Tuberculosis and Respiratory Diseases Clinic of the Royal University of Rome. Director: Honorable Prof. E. Morelli. A summary of the thesis admitted to the Faculty of Medicine of the Royal University of Rome in partial fulfilment of the requirements of the Tuberculous Diseases Diploma.

References

Apicolysis

1. Alessandri, R.—Indicazioni e risultati della toracoplastica e del piombaggio nella tbc. polmonare "Lotia contro la tuberculosi" n. 12, 1931.
2. Archibald—Extra-pleural thoracoplasty and a modification of the operation of apicolysis utilising muscle flaps for compression of lung "American Review of Tuberculosis" n. 4, 1921.
3. Ascoli, M.—Technical indications and results of extra-pleural pneumolysis with paraffin filling. "Lotia contro la tuber." 3, 486-493, May, 1932.
4. Ascoli, M.—Il tratt. chir. della tbc. polm. "Forze Sanitarie," n. 3, 1932; n. 18, 1934.
5. Ascoli, M.—Luzzatto Fegiz. G., Di una modificazione nella tecnica dell 'apicolosi semplice. "Lotta contro la tuber," April, 1935.
6. Baer—"Munch. Med. Woche," 1931.
7. Berard, L., Berart, I., e Danis, R.—Une tecnique simplifice de l'apicolise, "Presse Medicale," 1497, 1930.
8. Behrens, W.—L'operazione di piombaggio nella tubercolosi polmonare, "Schweiz. Med. Wochs," 1932, II.
9. Bernou, A., e Fruchaud, H.—Les plombages chez les tuberculeux bilateraux, "Revue de la tub," 1932.

10. BONNIOT—Remarques sur la technique et les suites operatoires de la thoracoplastie extra-pleurale, "Arch. Med. Chir.," 1927.

11. BROGLIO—Una nuova via di accesso per le due prime coste nella apicolisi, "Arch. Ital. di Chir," n. 34, 1933.

12. BRUNNER, A.—Piombaggio o plastica apicale nel trattamento chirurgico delle caverne isolate del lobo superiore, "Schweiz. Med. Woche," 1933.

13. CASTELLI, A.—L'apicolosi e il piombaggio extra-pleurico di paraffina nei rapporti del movimento respiratorio toracico, "Fisiol e Med." n. 3, 1932.

14. DUMAREST, F., E ROUGY, P.—L'apicolosi con piombaggio paraffinico, "Presse Med.", n. 1, 1930.

15. EISELSBERG, A.—Sul caratieristico aumento della temperatura in seguito a piombaggio polmonare, "Arch. Klin." n. 63, 1930.

16. FRANGENHEIM—Apicolysis for apical tuberculosis, technic "Arch. f. Klin. Chir." 162, 1930.

17. FELIX, W.—Extra-pleural plugging, "Ztschr. f. Tuberk." 59, 1931.

18. FONZO, G.—Apicolysis performed with rubber balloons (Rubber dam packing), "Lotta contro la Tuber." 3, October, 1932.

19. GILBERT, M. and FROHLICH, W.—Apicolysis with paraffin plugging, "Schweiz. Med. Wochs." 63, June, 1933.

20. GRAF, L.—Apicolyse et le plombage "Vie Medicale," n. 23, 1929.

21. HABERLIN, F.—Apicolysis and plombage, "Brit. J. Tuber." 29, April, 1935.

22. HEINI, K.—Su un nuovo piombaggio extra-pleurico del polmon, "Beitr. z. Klin. Tuberk." 73, 1930.

23. KREHMER—L'apicolisi di Lauwers come completamento del pneumotorace artificiale, "Breit. z. Klin. Tuberk." n. 80, 1932.

24. LAUWERS—Notes sur un nouveau procede d'apicolyse "Journal de Chirurgie," 1929.

25. MANTAU, A.—Apicolysis in apical tuberculosis, "Ztsch. f. Tuberk." 68: 323-331, 1933.

26. MARIANI, R.—Apicolysis in pulmonary collapse therapy, "Minerva Med." 1, March 3, 1934.

27. MAURER—Sull 'apicolisi, "Bull. Soc. nat. Chir." Paris, n. 59, 1933.

28. MCINDOE, R. B., ALEXANDER, J.—Extra-pleural paraffin pneumolysis for phthisis, "Amer. R. Tub." 1934.

29. MONALDI, V.—Sull 'apicolisi semplice nel trattamento della tbc. polmonare. Risultati clinici e meccanismo d'azione, "Lotta contro la Tuber." n. 3, Marzo, 1933.

30. MONALDI, V.—Fisiopatologia dell 'apparato respiratorio nelle tbs polmonare, Roma, 1937.

31. MORELLI, E—Convegno Laziale contro la tbs, Roma, 1933.

32. OMODEI ZORINI, A.—Apicolisi Semplice o Piombaggio apicale con paraffin, "Lotta contro la Tubercolosi," April, 1932.

33. OMODEI ZORINI, A.—Apikolysis Simplex ale Behandlungs methode der isolierten spirtzen kavernen, "Beit. z. Klin. der Tuber." 84, December, 1933.

34. OMODEI ZORINI, A.—Sugli Interventi di collassoterapia chirurgica dell apico polmonare: Apicolisi Semplice, Piombaggio Apicale e toracoplastiche parziale dell' apice: Studio critico, Indicazioni cliniche e casistica personele, "Annali dell'Instituto Carlo Forlanini, "Anno 1-n. 2, 1937.

35. PIZZAGALLI, L.—Sopra tre casi di apicolosi posteriore e pimmbaggio extra-pleurico secondo, "Baer. Studi. Clin. e Sociali. di tisiol." 3:25-36, 1932.

36. PROUST, R., MAURER, A. and ROLLAND, J.—Apicolysis without plugging, "Rev. de la tuberc." 1,3 January, 1932.

37. ROTH—Indicazioni e risultati del piombaggio nella tubercolosi polmonare, "Beit. z. Klin. Tuberk." n. 74, 1930.

38. REDAELLI, M.—Apicolosi e piombaggio extra-pleurico con paraffina, "Rassegna clinico scientifica dell' Instituto Bioch. Italiano," n. 1, 1932.

39. ROGERS, WIL.—Extra-pleural paraffin filling in thoracic surgery, "Amer. Rev. of Tuber." p. 636, 1931.

40. SIMMONDE, F. A. H.—Apicolysis post-mortem examination, Tubercle," 17:307, April, 1936.

41. SCHLANGE—Deutsch Gesell. f. Chir., 36 Congress, Berlin, 1907, page 80.

42. WALTUCH, E.—Extra-pleural plugging, "Kiener Klin. Wochs." 44, April 17, 1931.

PARTIAL THORACOPLASTIES

1. ARCHIBALD—Pulmonary Tuberculosis and its surgical treatment, "The American Journal of Medical Science," 1925.

2. ASCOLI, M.—Alcune considerazioni critiche sulla toracoplastica per tuberculosi polmonare, "Lotta contro la tubercolosi," n. 1, 1932.

3. ASCOLI, M.—Sulla tecnica della toracoplastica anterolaterale, "Forze Sanitarie," n. 18, 1934.

4. ASCOLI, M.—Torelli,, Sisti., Stegmayer, Cati, Besta., Sulla toracoplastica anterlaterale nel trattamento della tubercolosi polmonare, "Atti conv. Scient," Roma Marzo, 1933.
monaire. Ed. Doin., Paris, 1935.

6. BERNOU, GAIN, FRUCHAUD, BERNARD—La thoracoplastie partielle du sommet. La thoracoplastie partielle du sommet par voie sous-scapulaire, "Revue de la tuberc." n. 5, 1934.

7. Bernou, Fruchaud—Toracoplastiche superiori parziali, " Revue de Medecine," n. 2, 1936.

8. Berthet, E.—Une nouvelle methode chirurgicale dans le traitement de la tuberculose pulmonaire. La thoracoplastie anteralaterale de Monaldi, " Presse Medicale," October, 1935.

9. Berthet, E.—Pneumotorex et thoracoplastie homolaterale, " Revue de la tuberculose," n. 7, 1936.

10. Borotolotti—La toracoplastica anterolaterale parziale nel trattamento della tubercolosi polmonare con particolare riguardo alla cura degli empiemi parapneumotoracici, " Congresso Naz. Lotta Contro la Tuber." Roma, 1935.

11. Brauer, Spengler—Die operative Rehandlung der Lungen Tuberculose, " Handbuch der Tuberkulose," Bd. II, 3, Auflage, 1923.

12. Brunner—Die chirurgische Behandlung der Lungen Tuberkulose, " Leipzig Joan Ambrocius Barth," 1924.

13. Bull—Die thoracoplastikj in der Behandlung der Lungentuberkulose, VII Konf. der Intern. Vereingung gegen die Tuberkulose, Oslo, 1930.

14. Buonomo La Rossa—La toracoplastica anterolaterale alla Monaldi nelle tubercolosi Polmonare, " Rassegna Internaz. di Clinica e Terapia," n. 12, Giugno, 1936.

15. Castelli—Quando si puo e quando si deve sostituire un pneumotorace artificiale incompleto, piu o meno inefficiente, con altro mezzo collassante, " L'azione anti-tubercolare," n. 2, 1936.

16. Celotti—Considerazioni su 5 casi di toracoplastica anterolaterale alla Monaldi, " Lotta contro la

17. Clyne Meade—La scalenectomia come mezzo di soccorso della collassoterapia, " Amer. Rev. of Tub." 193.2

18. Coryllos, P. N.—One hundred and seventy cases of Thoracoplasty (307 operations), " J. Thoracic Sur." 3, 441, 1934.

19. Coryllos, P. N.—Mechanics and Biology of Tuberculous Cavities, " Amer. Rev. Tuber." 1934.

20. Coryllos, P. N.—Management of Bilateral Cavernous Pulmonary Tuberculosis, " The Journal of Thoracic Surgery," April, 1936.

21. Denk und Domaing—Zur chirurgie der Lungen Tuberkulose, " Beitr. z. Klin. d. Tbk." 77, Band, 1931.

22. Di Paola, P.—La toracoplastica anterolateral en el tratmiento quirurgico de la tuberculosi pulmonar, " La Prensa Medica Argentina," September, 1936.

23. Dolly—Apical Thoracoplasty, " Amer. Rev. Tuberc." July, 1935.

24. Fishberg, M.—Pulmonary Tuberculosis, Philadelphia, 1932, ed. 4, Lea and Febiger.

25. Forlanini, C.—Il pneumotorace artificiale guarisce la tisi? Ed in qual mod? " Reforma Med." 27, n. 1, 1911.

26. Gaeta—La toracoplastica anterolaterale, " Lotta contro la Tuberculosi," Aprile, 1936.

27. Gucci, G.—Nozioni elementari di retrattiloterapia chirurgica della tubercolosi polmonare Ed Pozzi Roma, 1936.

28. Gravesen, J.—" Ztschr. f. Tuberk." 66:53, 1932.

29. Graf—Demonstrazione di alcuni quadri sulla tecnica della toracoplastica, " Deutsch Med. Woch."

30. Hans Edel—Anterolateralni plastika nova lecebni metoda plicni tuberkulosy, " Zvlastni Otsik z. casopisu lekaru ceschych," cis 40, 1935.

31. Head—Extra-pleural thoracoplasty, " Amer. Rev. of Tuber." April, 1935.

32. Hedblom and van Hazel—Results of het extra-pleuric thoracoplasty, " Jour. of Thoracic Surgery," Oct., 1934.

33. Jessen, H.—Thoracoplasty in Bilateral Cavernous Tuberculosis, " J. Thoracic Surgery," 4:1, 1934.

34. Katyar, P. D.—Anterolateral Thoracoplasty in the Treatment of Pulmonary Tuberculosis, " J. Indian Medical Association," December, 1936.

35. Katyar, P. D.—Clinical Indications of Anterolateral Thoracoplasty, " J. of the Indian Medical Association," December, 1936.

36. Katyar, P. D.—Treatment of Empyemas Occuring during Artificial Pneumothorax, " J. of the Indian Medical Association," January, 1937.

37. Katyar, P. D.—Functional Syndromes in Mediastinal Displacement without active Pulmonary Lesions, " J. Indian Medical Association," August, 1937.

38. Leiner, W.—Uber ein neues Verfahren einer anterolaterlen thoracoplastik, " Beit. z. Klin. d. Tuber." 84, 1934.

39. Lilienthal—Extra-pleural Thoracoplasty for pulmonary Tuberculosis, " The Amer. Rev. of Tuberc." April, 1925.

40. Maurer—La thoracoctomie elastique de detente et d'attente, " Revue de la tuberculose," October, 1935.

41. Monald, V.—Tentativi di nuovi methodi di toracoplastica totale nel trattamento della tubercolosi polmonare, " Lotta contro la tuberculosi," Gennaio, 1933.

42. Monaldi, V.—Sulla toracoplastica anterolaterale nel trattamento della tubercolosi polmonare, " Atti Conv. Scient. Sez. F. I. N. F. per la lotta contro la tuberculosi," Roma 28-29, Marzo, 1933.

43. Monaldi, V.—Il Primo anno di toracoplastica anterolaterale, " Riv. di patol dell'app. Resp." December, 1933.

44. Monaldi, V.—La toracoplastica anterolaterale nel trattamento della tubercolosi pilmonare, " Rollett. e Atti della R. Accademia Med. di Roma," Maggio-Giugnio, 1934.

45. MONALDI, V.—La toracoplastica anterolaterale nel trattamento della tubercolosi polmonare, "Minerva Medica," 18 Agosto, 1935.

46. MONALDI, V.—Due anni di toracoplastica anterolaterale nel trattamento della tubercolosi. Risultati clinici dei primi 80 casi, "Atti Soc. Lomb. di Chirurgia," 25 November, 1934.

47. MONALDI, V.—La cura dell'empiema parapneumotoracico, "Congr. Maz. per la lotta contro la Tubercolosi," Roma, November, 1935.

48. MONALDI, V.—Resume de trois ans d'etudes sur la cure de la tuberculose pulmonaire par la thoracoplastie anterolaterale. Observation regardant 200 cas, "Arch. Med. Chirurg. de l'appareil respiratoir," Maggio, 1936.

49. MONALDI, V.—Indicazioni cliniche della toracoplastica anterolaterale, "Riv. di Patol e Clinica della Tuberc." Maggio, 1936.

50. MORELLI, E.—Sistematizzazione dei vari metodi di terapia chirurgica della tubercolosi pilmanare, "Atti Conv. Scient. Sez Laz. Fed. Ital. Fasc. per la lotta contro la tuber." Marzo, 1933.

51. MORELLI, E.—La cura delle ferite toraco-polmonari L. Cappelli Bologna, 1928.

52. MORELLI, E.—Convegno Laziale contro la tubercolosi, Roma, 1933.

53. MORELLI, E.—Perin Malattie dell apparato respiratorio, "Trattato Italiano di Medicina," Interna, 1931.

54. MORELLI, E.—Lezioni di clinica della tubercolosi, 1928-1929.

55. MORELLI, E.—Comunicazione al XXIX Congr. di Med. Inter." 1928.

56. MORELLI, E.—Il tagilio del nervo frenico nelle malattie dell appa. respiratorio, "Boll Soc. Med. Chir." Pavia, 1924.

57. MORELLI, E.—Frenicotomia e pneumotorace artificiale, "Comunicazione al XXX Congr. Med." Int., 1924.

58. MORRISTON DAVIES—Surgical treatment of cases of pulmonary tuberculosis, "British Medical Journal," 1923.

59. PROUST, R., MAURER, A. and ROLLAND, J.—La toracoplastica superior allargata, "Arch. Med. Appar." respirat. n. 7, 1932.

60. POTOTSCHNIG—Stato attuale della tub. polm., "Rel al Cong. Veneto della Tub." Vicenza, 1936.

61. PRUSSIA—La toracoplastica anterolaterale parziale tubercolosi polmonare, "Rinnovamento Medco," November, 1935.

62. SAUERBRUCH, F.—Chirurgie der Brustorgane, Berlin, 1930, Julius Springler.

63. SKIBINSKI, Z.—Torakoplastika przednio boezna Monaldi, "Polska Gazeta Lekaraka," 1934.

64. SCHAIM, A.—Toracoplastica anterolaterale a lui Monaldi, Bucaresti Medical," n. 1, 1936.

65. THEVARTHUNDAL, J.—Anterolateral Thoracoplasty in Pulmonary Tuberculosis, "Tubercle," 1936.

66. TORELLI, G.—Sanatorium, 1934.

67. ULRICI—Thearpie der Tuberkulosen Kaverne, "Deuts Med. Woch." April, 1937.

68. ALEXANDER—The Collapse Therapy of Pulmonary Tuberculosis, 1937.

IDIOPATHIC HYPOCHROMIC ANÆMIA

Its Aetiology, Diagnosis, Treatment and Report of Four Such Cases

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The last fifteen years of the present century have seen the dawn of a new era in hæmatology. Our conceptions of anæmias have undergone marked changes. Following the discovery of the part played by liver and its extracts—mainly due to the brilliant work of Minot and Castle, also by an intense study of bone-marrow at the post-mortem tables, in experimental animals and by sternal puncture in patients, we understand better the significance of the variation in the size and morphological structure of the red cells. We know now more about the bone-marrow as a hæmopoietic factory, engaged under various physiological and pathological conditions, in the manufacture of red cells. We have clearer ideas of the requirements of bone-marrow in the way of hæmopoietic principles—substances essential for the production of fully finished products from the bone-marrow, *viz.*, normal erythrocytes or normocytes. We have also learnt during the past few years that at least two hæmopoietic principles are of paramount importance for the manufacture of red blood cells. One of them is the substance formed by the interaction of an "extrinsic" principle, linked with vitamin B_1 complex and taken with the food, and the "intrinsic" principle secreted mainly by the gland of gastric mucosa. This substance thus elaborated is called the "P-A" factor (Vaughan) and is stored mainly in the liver to be utilised by the bone-marrow. So much attention has been fixed on this anti-anæmic liver principle, both by the manufacturers and the medical men, that we are inclined to belittle the role of the other hæmopoietic principle. This important substance is iron, which is supplied normally to the body through the various food substances. Iron is of equal, if not greater, importance for the normal hæmopoietic activity of the bone-marrow.

The role of both these substances has been found to be specific, they are complementary to each other and are required at specific stages in the development of the red cells. One cannot over-emphasise the fact that they are not interchangeable or capable of replacing each other. Both are essential for the maturation of red blood cells, and the deficiency of both is reflected by the half-finished, ill-finished and even unfinished products being thrown out into the peripheral blood. In conditions of deficient supply or lack of "P-A" factor, the bone-marrow turns out red cells which are bigger in size and richer in their hæmoglobin content, as determined by the Mean Corpuscular Volume or Mean Corpuscular Diameter and the Mean Corpuscular Hæmoglobin content, resulting in the anæmia we call Macrocytic Hyperchromic. On the other hand, a deficiency of iron, brought about by diminished supply, results in a hypochromic microcytic anæmia, with cells which are smaller in size (low M. C. V.) and have hæmoglobin far below the normal value (low M. C. H.).

The present article is meant to be a study of the current views on a special type of iron-deficiency anæmia, called the idiopathic hypochromic anæmia, or chronic microcytic anæmia. During the past eight or ten months, we have been able to study a good few cases of this type, and some of those cases will be described at the end of this article.

Iron-deficiency anæmias have previously been named as 'chlorotic anæmias', some prefer to call them "secondary". True chlorosis has practically disappeared, and a young medical man hardly, if

over, comes across a case of anæmia in a young girl associated with greenish colouration.

The commonly accepted causes of such "secondary" anæmias are (1) hæmorrhage, specially from peptic ulcer, hæmorrhoids or menorrhagia; (2) infections, specially subacute bacterial endocarditis, tuberculosis, acute or subacute rheumatism, chronic suppurations and of foremost importance in this country, infections helminthic or protozoal, either of the blood or the intestinal canal; (3) new growths, (4) toxæmias as chronic nephritis. In all these conditions, unless the cause is removed, hæmatinic remedies have already produced much effect.

The name idiopathic hypochromic anæmia is given to those cases of hypochromic anæmia, of low colour index, which do not fall in any of the causes mentioned above. This anæmia has been given different names: simple achlorhydric anæmia; chronic microcytic anæmia, Witt's anæmia; Faber's syndrome.

The disease was first recognised by Faber (1909 and 1913). Witts (1930-1931) drew attention to this condition for the first time in England, and described fifty cases. During recent years much light has been thrown on the subject by a number of papers that have been published on iron and its metabolism (Brock and Hunter, 1937; Brock, 1937; Fullerton, 1937). The factors that take part in the pathogenesis of these chronic iron-deficiency anæmias are now much better understood.

The presenting symptoms of these cases are so variable that the correct diagnosis is likely to be missed if the medical man is not thoroughly conversant with the protein manifestations of this disease. We have noticed how some of these cases are treated for a long time as cases of "pernicious anæmia", as "anæmia of pregnancy" (because of associated amenorrhœa), or "sprue", because of glossitis, diarrhœa and anæmia, with expensive liver preparations without any benefit to the patient. The object of this article, therefore, is to focus the attention of the medical profession to this not uncommon malady, specially amongst women in whom it causes chronic state of ill-health and makes them seek advice with such presenting symptoms as diarrhœa only, anæmia and low fever, glossitis, soreness of mouth, perhaps accompanied by dysphagia.

Incidence

Sex—The disease is far more common in women. Various observers (Wintrobe, 1933; Witts, 1931); found that between 80 and 90% cases occur in women. It is definitely rare in men. Britton (1936) found four cases of idiopathic hypochromic anæmia in men in a series of sixty-six cases. We have seen only one case in men, while we have seen a good few in women.

Age incidence is also strikingly constant. It is commonest between thirty and fifty years, and rare before twenty and after fifty years. In other words, it is commonest during the reproductive period of life and tends to improve spontaneously after menopause. As far as we know, no statistics are available about the age and the sex incidence of this type of anæmia in India.

Clinical Manifestations

Onset is always insidious. The history of a vague ill-health, lassitude, and weakness dates back in terms of years rather than months. Sometimes the patients connect this with their last pregnancy.

Most of the general symptoms are referable to the anæmic state as dyspnœa, pallor, palpitation, and headaches. At times the patient complains of precordial pain made worse by effort.

Gastro-intestinal symptoms are usually prominent; abdominal pain, loss of appetite, eructations, sometimes diarrhœa, and at times constipation.

Glossitis is present in about 50% of cases (Witts, 1931). At times it is painless and unknown to the patient. When active, the tongue is red and excoriated; vesicles or even shallow ulcers may be present. The inflammatory changes may extend to the buccal mucous membrane, and the corners of the mouth may be cracked, red and sore. In the chronic quiescent stage, the papillæ of the tongue are destroyed, and the tongue is smooth, bald and atrophic—"glazed tongue". Glossitis is said to be more constant in this type of anæmia than in pernicious anæmia (Davies, 1931; Britton, 1934). In view of the rarity of true pernicious anæmia in India and the absence of any tongue symptoms in tropical macrocytic anæmia, the presence of glossitis with anæmia in a woman should be taken as highly suggestive of hypochromic anæmia. Dysphagia is present in about 15% of cases, and is always present

in association with glossitis, and pharyngitis. Witts (1931) believed that dysphagia is due to spread of inflammatory changes to the œsophagus, and destruction of nerve terminals which initiate shallow reflex. Vinson (1922) thought it was hysterical. Hurst (1928) believed dysphagia to be an achalasia, rather than a spasm of the pharyngo-œsophageal sphincter.

Some patients complain of glossitis, dysphagia and anæmia, and the combination of these three symptoms is so striking and definite that it is often referred to as Plummer-Vinson syndrome, the original cases having been described by Vinson (1922). The appearance of the patient is also characteristic—thin, with a peculiar muddy yellow complexion, fine hair and tendency to turn grey at an early age. (Vaughan, 1937). Œdema may be found specially in severe grades of anæmia.

Finger nails are peculiarly characteristic. They show spoon-shaped depression and longitudinal ridges, or/and may be brittle and fragile looking (koilonychia). This type of nails is rarely seen in any other condition.

Spleen may be slightly enlarged.

Menstrual disturbances are frequent, specially menorrhagia, sometimes amenorrhœa, and are usually relieved by iron therapy. In all probability they are secondary to anæmia rather than the cause of it.

No nervous signs or symptoms have been seen. Subacute combined degeneration of the cord or any other organic lesion of the central nervous system has not been found.

Blood Picture

1. Total red blood cells are only moderately reduced. Counts about 4,000,000 per c.mm. are common, though higher and lower counts have been encountered.

2. Hæmoglobin is usually low, and is affected to a greater extent. It is usually below 50%.

3. Colour index is thus definitely low, in the neighbourhood of 0·5 or even less.

4. Mean Corpuscular Volume is low, and the average is about 65c mu. Normal 75-95 c mu. (Wintrobe and Beabe, 1933).

5. Mean Corpuscular Hæmoglobin in the neighbourhood of 18r (Normal 22-30r).

6. Mean Cell Diameter may be less than normal, but often falls within normal limits. In a series of eight cases Price-Jones found the mean diameter ranged from 6·2 μ to 6·7 μ In all there was a microcytosis. (Vaughan, 1937).

7. Stained blood films present characteristic appearances. Most of the cells look small, pale with only a small ring of hæmoglobin at the edge and an almost empty centre, "empty envelope." Anisocytosis and poikilocytosis are slight. Only in severe cases an occasional normoblast may be seen.

8. The white cells are within normal limits. Differential counts show no abnormality.

9. Indirect Van den Bergh reaction is negative.

Achlorhydria or hypochlorhydria is a common finding. Witts (1931) found 81% of his cases (101 cases) achlorhydria or hypochlorhydria of extreme degree. Other workers (Davies, 1931; Oliver and Wilkinson, 1933) have shown that achlorhydria is found in over 50% of cases even after histamine injection. Janet Vaughan (1937) in a series of typical cases of idiopathic hypochromic anæmia found that only 14% had achlorhydria. It is clear, therefore, that though achlorhydria is frequent, it is by no means a constant finding. In our cases, three out of four, in which a test meal was done showed histamine-fast achlorhydria. The part which achlorhydria plays in the causation of iron deficiency will be discussed later on.

Pathology

Rarely do patients die of this type of anæmia and hence our knowledge of pathological lesions is not very complete.

Bone marrow is reported to be hyperplastic and red. Femur and humerus have been found to contain excess of red marrow. (Whitby and Britton, 1937). Microscopical picture of the marrow tissue showed crowding with normoblasts and very few megaloblasts were seen, in contrast to the megaloblastic reaction in pernicious anæmia. Spleen showed in one case hyperplasia of the reticuloendothelial system without any fibrosis or gross structural changes. (Witts, 1930). Hyperkeratinisation of the mucous membrane of the tongue and pharynx was noticed.

Pathogenesis

There is no doubt that idiopathic hypochromic anæmia is relieved by adequate doses of iron. Minot and Heath (1932) observed that administration of iron is promptly followed by an outpouring of reticulocytes. Idiopathic hypochromic anæmia and pernicious anæmia both show similarity in so far that while the former is characterised by the arrest of the red cells development at the normoblastic stage, and is relieved by iron, in the latter the maturation arrest is at the megaloblastic level and the anæmia is relieved by administration of liver principles.

During the recent years in some countries, the study of iron metabolism has been taken up by various workers, and the various sources of iron loss, the quantity daily taken in the diet, and the quantity stored has been studied. Even in India, the work has been attracting attention. Recently, a diet survey of healthy Sikh soldiers has been carried out (Shourie and Singh, 1938). A study of the iron-balance sheet of the body will be of use in understanding the pathogenesis of hypochromic anæmias.

Iron Stores (normal human).

Circulating blood . . .	2·44 grams.
(5000 c.c. blood; 13·8 grams per cent. Hæmoglobin)	
(0·335 grams iron per cent. in Hæmoglobin)	
Circulating Hæmoglobin	2·31 grams.
Liver	0·2 grams.
Spleen and other organs	1·81 grams.
Total in the body	4·45 grams.

Daily Iron Intake.

Average Diet (total) . .	10-20 mgm.
Average Diet (available) . .	7-9 mgm.
Poor Diet (total) . . .	5-10 mgm.

Daily Loss of Iron.

Fæces	5-20 mgm.
Urine	0·5-1 mgm.
Bile	0·5 mgm.
Hæmolysis of effete red corpuscles	·80 mgm.

Special Sources of Loss in the Female.

Menstruation (Normal) per month . . .	3·8-78·4 mgm.
Iron content of full term fœtus	375 mgm.
Iron secreted in lactation .	750 mgm.
Iron required for placenta and growing size of uterus . . .	??

It will be noticed how out of a total of 4·4 grams of iron in the body nearly 50% (2·44 grams) is circulating in blood as hæmoglobin. Hence, it follows that factors responsible for a deficient intake of iron or chronic loss of blood would seriously deplete the body stores of iron. And, the deficiency will manifest itself as a deficiency of hæmoglobin—a failure of the erythron to produce hæmoglobin for the developing red cells—and it is reflected in the blood picture of hypochromic anæmias—as low colour index, low mean corpuscular hæmoglobin, and low corpuscular hæmoglobin concentration. Probably the two main factors are (1) deficient intake of iron and (2) increased demands for iron.

(1) Deficient intake of iron is due to deficient iron content of the diet. Analysis of the diets of one thousand unemployed families of Aberdeen, showed the iron content to be below the accepted standard of 15-20 mgm. daily. In the same families 50% of women were anæmic, while it was not so in men. It was also shown by Davidson and his colleagues (1933) how the anæmia was more common in women between 40 and 50 years of age, specially those who had borne children and less common over 45 years and least common in those who had no children.

It follows, therefore, what is a sufficient diet for a man proves inadequate, as regards its iron content, for a woman in the face of increased demands for iron. In this connection it is interesting to note the observation made by McCance (1936) that the hæmoglobin level of normal women in England were being limited by their low iron intakes. Similar observations have been made by Sankaran and Rajagopal (1938) who were able to raise the hæmoglobin levels in girls and young women in South India by administration of iron. Widdowson and McCance (1936) have stressed the importance of diets from the point of available iron. A person may be on a diet rich in iron and yet a small portion of that iron may be available, while another may be on a diet comparatively poor in iron, yet more of it may be available. This dietetic deficiency of iron may be made worse by such factors as defective gastric secretion, hypo or achlorhydria. The various workers have found

varying proportion of anæmia cases with achlorhydria and though not a constant finding, it is fairly frequent. Achlorhydria causes loss of appetite for iron-containing foods as meat or green vegetables. The absorption of iron is probably diminished in the absence of free hydrochloric acid, and lastly achlorhydria is often associated with other signs of asthenic diathesis in which anæmia so readily occurs. (Witts, 1931).

(2) Increased demands of body for iron has to be faced by women, partly because of repeated blood loss at menstrual periods (iron loss varying from 3·8 to 78·4 mgm. per month), and partly because she has to provide large quantities of iron for the growing fœtus, for his tissues and blood, as also for storage for the few early months of life. (Iron content of full term fœtus 375 mgm.). In addition, she needs more iron to compensate for the loss of iron in milk during period of lactation (750 mgm. of iron), and also to make good the loss of iron from blood loss during parturition.

It is evident, therefore, that the two factors, *viz.*, deficient intake of and increased demands for iron are responsible for the causation of hypochromic anæmias. It also can be explained how the greater loss of iron from various sources connected with menstruation and parturition in women is responsible for the greater incidence of anæmia in women as compared to men.

Treatment

The fundamental importance of iron as a hæmopoietic substance has already been emphasised. The available iron from food is absorbed and is then stored or transported to those places where it is required for its catalytic action or tissue respiration, and also for the building of hæmoglobin. Iron is taken up by the nuclei of erythroblasts which elaborate hæmoglobin from it, and are extruded from the ripening cells when the task is completed, resulting in the formation of mature erythrocytes. An obvious microcytosis, low colour index and pale vacuolated red cells mean essentially a deficiency of iron in the body. The microcytosis occurs so that the available hæmoglobin shall be used to the greatest advantage and greater total surface of hæmoglobin is presented to the blood stream and therefore its oxidation functions can be carried out better than with the red cells of normal size. (Parsons, 1038).

The treatment, therefore, of hypochromic anæmias can be summed up in one drug, *viz.*, iron, administered suitably, in adequate doses, and for sufficiently long time.

Normally human beings derive their supply of iron from food, but this source of iron is not sufficient to cope with the increased demands of iron in the anæmic state. Hence, iron has to be administered in the form of a drug, and this is sufficient in most cases to relieve such symptoms as diarrhœa, koilonychia, and even dysphagia when present. The anæmia gradually improves, and we have noticed a remarkable sense of well being that the patient feels after the drug has been administered for a few days.

Preparation of iron to be used should be such as can be easily absorbed and assimilated. It has been clearly shown that our food iron is present in organic form and has to be changed into simpler and ionised form before it can be absorbed. Those preparations of iron in complex organic combination as various "hæmoglobin syrups" are generally found to resist this process and escape absorption. This observation, backed by good clinical experience abroad, is extremely valuable and interesting in view of the large consumption of various proprietary preparations of hæmoglobin and their utter uselessness in relieving iron deficiency anæmias. (Heath, Strauss and Castle, 1932; Witts, 1934). The best form of iron for this purpose is, therefore, in simple inorganic forms. A large number of iron preparations have been tried, and it has been found that ferrous salts are more effective than ferric salts. Ferrous sulphate, ferrous chloride, and ferrous carbonate (Blaud's pill) as also the scale preparations of iron are most efficient. Wilkinson (1936) considers ferrous chloride as most efficient, for probably this is the form to which most of the available iron is converted in the stomach before absorption. He recommends a total daily dose of 9 to 18 grains of stabilised ferrous chloride (Boots) supplied in capsules of 3 grains each.

Ferrous sulphate exiccatus (Glaxo) is also effective in smaller doses. It is claimed that 9 grains are usually sufficient. Brock (1937), recommends 15 grains daily.

Ferrous carbonate (Blaud's pill) is also used in

doses of 60 grains daily. The above pills should be freshly prepared and crushed before use otherwise there is likelihood of the pills passing out unabsorbed.

Iron ammonium citrate is very widely used in doses of 90 grains daily (30 grains t.i.d.) in mixture form. We have used this preparation on a large number of cases with very good response.

Rationale of Massive Doses of Iron. It has been clearly established by recent work that these anæmias are conditioned mainly, if not solely, by a state of iron deficiency, and that they cannot respond to any form of therapy which does not supply enough iron to be incorporated in the new hæmoglobin. A satisfactory response to iron is a rise of hæmoglobin of from 1 to 2% per day, representing an addition of 25 to 45 mg. of iron to the circulation.

Research workers have been trying to explain satisfactorily the rationale of administering such large doses of iron when only a comparatively small amount of iron is actually incorporated in the blood hæmoglobin. Schulten (quoted by Witts, 1936), thought it was a "threshold phenomenon" and that it is only on raising the dose to a minimum level that therapeutic effects are produced. Schulten, as well as other workers, found that in some cases while 2 grams daily of reduced iron had no effect, 6 grams produced a prompt response in the blood picture. Space does not allow us to refer to the various views expressed on the rationale of the massive doses. One is baffled with the mysterious efficacy of large doses. There seems no satisfactory explanation of the necessity of such large doses. The use is empirical but the value of large doses is very well attested by clinical experience.

Injection of Iron Preparations. Use of iron preparations parenterally has been proved to be useless. The administration of 25 to 50 mg. of iron by intramuscular or subcutaneous route is extremely uncomfortable and even a dangerous procedure for the patient. (Heath, Strauss and Castle, 1932). The well-known preparations of iron for injection contain less than 3 mg. of iron per dose and their use in iron deficiency anæmias is ridiculous. There seems no indication or use for injection of iron in the treatment of anæmia.

Period of Treatment with iron has to be sufficiently prolonged. Though the patient feels better even after 10 days treatment, the drug has to be continued for prolonged periods. On an average, severe cases should be kept in the hospital for six weeks, in which period they show very good improvement in the blood picture as will be seen from the report of the cases with this article. As a matter of fact, the patients feel so remarkably well that it is difficult to keep them in for even six weeks. The patients, however, have to be advised to take some form of iron, though in smaller doses, for indefinite periods.

Toleration. Most people tolerate iron in such massive doses very well. Ill effects from large doses of iron given by mouth have rarely been reported. Some people allege that they cannot tolerate iron in any form and that it gives rise to gastric and other disturbances. Ungley (1938) reports of a case of a woman who defied efforts to induce her to take iron for 11 years. By giving her iron in gradually increasing doses and without her knowledge, it was possible to bring about a complete recovery without any "gastric" symptoms. Scale preparations are well-tolerated, and rarely cause constipation. In most cases diarrhœa, tongue soreness, and koilonychia disappear by massive doses of iron.

Administration of Dilute Hydrochloric Acid is advocated on the theory that a good few of these cases have absence of free hydrochloric acid in their stomach, (Three cases out of four in which a test meal was done showed histamine-fast achlorhydria), and that iron was more readily absorbed in acid medium. This does not seem essential as we found that with big doses of iron alone, in most cases, a cure can be brought about in the presence of achlorhydria. In one case only, administration of dilute hydrochloric acid promptly checked the diarrhœa which otherwise proved intractable.

Copper. It is usually believed that presence of copper is essential for the effective use of iron. In our cases, we did not administer copper to any patient, and all of them responded to iron treatment. Copper is worthy of trial in any case that does not respond to iron, but such cases appear to be rare. (Vaughan, 1937).

Diet. In addition to medication, it is a help to advise patients to eat food articles rich in available iron. Yolk of egg, meat, green vegetables, etc.,

should be taken in good amounts. It must be recognised, however, that they cannot substitute iron administered in massive doses for the treatment of hypochromic anæmias.

CASE REPORTS

Case No. 1. Mrs. H., Mohammadan; age 31 years; married: Admitted with a year's history of marked soreness of mouth, and tongue; difficulty in swallowing. Pain in the abdomen, griping and intermittent in character, accompanied by irregular bouts of diarrhœa and abdominal distension. Slight fever and pain in the præcordial region.

Past history.—Cholera 8 years ago. Anæmia with marked œdema of the whole body during last pregnancy 3 years ago. Three children. Amenorrhœa for 4 months, no sign of pregnancy.

On examination.—Fairly well nourished. Marked pallor. Hair mud coloured and fine. Bluish white sclerotics. Koilonychia well marked, slight puffiness of the face without œdema on the feet or sacrum. Tongue sore, painful, with small superficial ulcers on dorsum, tip, edges, and under surface. Buccal mucous membrane showed superficial ulcers. Angle of the mouth, sore, red and cracked.

Abdomen—marked distension, no tenderness or masses felt on palpation, spleen and liver not enlarged.

Circulatory system—no enlargement of heart. Hæmic systolic basal murmur heard.

Respiratory and Nervous systems showed no abnormality.

Genito-urinary system—uterus not pregnant; no abnormality.

Blood Examination on admission—Total R. B. C. 3,950,000 per c.mm.

Hæmoglobin—36% (Hellige) 4·95 gram.
Colour Index—0·45; M.C.V. 53·1 $c\mu$; M.C.H. 12·6 rr.
M.C.H.C.—23·8%; Total W.B.C. 3,650 per c.mm.
Red cells showed marked vacuolation and microcytosis.
Van den Bergh's Reaction—Completely Negative.

Fractional Test Meal showed histamine-fast achlorhydria. hydria.

Stool and urine examination showed no abnormality.

Treatment—Ordinary hospital diet; Iron Ammonium Citrate gr. xxx t.i.d. in mixture form. After about ten days treatment marked improvement was noticed all round. Discharged six weeks after; soreness of tongue and mouth, koilonychia as also diarrhœa and abdominal distension had disappeared.

Blood Examination—R.B.C. 5,100,000 per c.mm.
Hæmoglobin—82%; M.C.V. 73·1 $c\mu$.

Case No. 2. Sharbati; Hindu; aged 24 years; married; vegetarian. Admitted with history of low fever without rigor off and on for one year; palpitation and breathlessness on exertion; cough without expectoration for six months; œdema on the feet; diarrhœa now and then. No children; abortion 5 years ago.

Examination.—Pale and slightly jaundiced. Puffiness of the face, œdema of the feet, lower half of the legs and over sacrum. Koilonychia marked. Tongue smooth, pale and no soreness. Temperature 99·4°F. Pulse 120 per minute, collapsing in character; Blood pressure 120/50.

Abdomen.—No distension; no tenderness or mass palpable. Liver enlarged and tender, 3-inches below the costal margin. Spleen enlarged 4″. Free fluid detected.

Circulatory System.—Heart enlarged to left 4½″ from midsternal line. Systolic murmur in pulmonary and mitral areas; Diastolic murmur on the left border of sternum.

Respiratory System—Crepitation at both the bases.

Nervous and genito-urinary systems—Normal.

Blood examination on admission—R.B.C. 1,250,000 per c.mm.
Hæmoglobin (Sahli)—14%, 2·38 grms. M.C.H. 19·8 rr.
M.C.V.—69·7 $c\mu$. Colour Index 0·7.
W.B.C.—2,000 per c.mm. Wassermann Reaction negative
Fractional Test Meal—Histamine-fast achlorhydria.
Stool Examination—Negative.

Treatment.—Iron Ammonium Citrate gr. xxx t.i.d. in mixture form. After about ten days treatment, an all round improvement was noticed. Oedema gradually disappeared, her temperature settled down. Heart showed diminution in size and the diastolic murmur disappeared. Liver and spleen also got reduced in size.

Blood examination at the time of discharge was R.B.C. 3,800,000 per c.mm. Hæmoglobin (Sahli) 56%, 9·52% gram.; M.C.H. 25·0 rr. Colour Index 0·9 M.C.V. 94·4 $c\mu$.

Case No. 3. Mrs. A., Mohammadan; 40 years; Non-vegetarian. Admitted with a years' history of diarrhœa without blood or mucus, soreness of mouth and tongue; abdominal discomfort after meals.

Past history—Diarrhœa and soreness of tongue and anæmia 2½ years ago when she was diagnosed and treated as a case of sprue. Children 4; one alive. Menstrual periods normal and regular.

Examination—Pale and emaciated. Tongue small, pointed, smooth and glazed on the surface. Nails flattened and slightly striated. General mental apathy.

Abdomen—Slight distension. No ascites. No enlargement of liver or spleen detected.

Respiratory, Circulatory, Nervous and Genito-urinary systems normal.

Blood Examination.—R.B.C. 3,620,000 per c.mm. Hæmoglobin 42% (Sahli) 7·14 grams. Colour Index 0·7. M.C.H. 19·7 rr.; M.C.V. 73·3 $c\mu$. W.B.C. 9,200 per c.mm. Wassermann Reaction completely negative.

Stool Examination did not show any abnormality.

Fractional test meal showed presence of normal free hydrochloric acid.

Treatment—Iron ammonium citrate gr. xxx t.i.d. Patient responded very well. Abdominal discomfort and distention disappeared after a weeks treatment. Patient became mentally brighter, gained 15 lb. in weight in about 5 weeks. Blood examination revealed R.B.C. 3,920,000 per c.mm. Hæmoglobin 60% (Sahli) 10·2 grams. M.C.H. 29·9 rr.; M.C.V. 91·7 $c\mu$ Colour Index 0·97.

Case No. 4. Mrs. N., Hindu; 30 years; vegetarian. Admitted for diarrhœa without blood and mucus for 2½ years. Vague abdominal pain; marked soreness of mouth and tongue.

Past History—No illness of importance. Amenorrhœa for 2½ years. Has never been pregnant.

Examination—Pale muddy complexion. Tongue markedly sore and red; superficial ulcers on dorsum and under surface of the tongue and also on the buccal mucous membrane. Gums spongy.

Abdomen—No ascites, no enlargement of spleen or liver. No palpable mass or tenderness.

Heart—Showed no abnormality except basal systolic murmur.

Respiratory, Nervous, and Genito-urinary systems were normal.

Stool Examination did not show any abnormality. Total and neutral fats and free fatty acids were within normal limits.

Blood examination—Total R.B.C. 1,850,000 per c.mm.

Fractional test meal showed histamine-fast achlorhydria. Hæmoglobin 21% (Sahli) 3·5 grams M.C.H. 19·4 rr. Colour Index 0·58. M.C.V. 70·1 $c\mu$.

Red cells showed microcytosis and marked vacuolation.

Treatment—Iron ammonium citrate gr. xxx t.i.d. and dilute hydrochloric acid ½ dram twice a day. Because of spongy gums orange juice and tomatoe juice was given. The patient is showing marked general improvement and is still under treatment.

Conclusion

In the above few pages, an attempt has been made to summarise modern views on the primary or the "idiopathic" iron deficiency anæmias, and clinical history, hæmatological picture and response to treatment of four such cases have been described. The recognition of the relation of nutritional deficiency to disease is of great importance to this country, where a greater proportion of people live on a deficient diet and suffer from a host of diseases caused by intake of an ill-balanced or deficient diet. Chronic iron deficiency, specially in the face of increased demands for iron as happens in the case of women, is responsible for a good deal of chronic ill-health and this type of anæmia is far more common in our country than is generally believed. The importance lies in early recognition of this condition by its various characteristic manifestations and its treatment by iron in adequate doses. The practice of treating almost all cases of anæmia with expensive liver preparations cannot be too severely condemned, specially when we realise how a good many of cases can be cured completely by prescribing such a comparatively cheap remedy as iron.

References:

Ahlbom, H. E.—1936, *Brit. Med. J.*, 2, 331.
Britton, C. J. C.—1934, *N. Z. Med. J.*, 33, 372.
Brock, J. F. and Hunter, D.—1937, *Quart. J. Med.*, 6, 5.
Brock, J. F.—1937, *Brit. Med. J.*, 1, 314.
Burger, G. N., Witts, L. J.—1934, *Guys. Hosp. Rep.*, 84, 14.
Davies, D. T.—1931, *Quart. J. Med.*, 24, 447.
Davies, D. T.—1931, *Lancet*, 11, 385.
Davidson, *L. S. P.*, et al, 1933—*Brit. Med. J.*, 1, 685.
Faber, K.—1913, *Klin. Wschr.*, 50, 958.
Fullerton, H. W.—1936, *Brit. Med. J.*, 11, 523.
Goswami, H. and Basu, U. P.—1938, *Ind. Journ. Med. Res.*, 25, 2, 893.
Hurst, A. F.—1928, *Brit. Med. J.*, 1, 375.
Heath, C. W., Strauss, M. B. and Castle, W. B.—1932, *J. Clinical Invest*, 11, 1293.
Minot, G. R. and Heath, C. W.—1932, *Amer. J. Med. Sci.*, 183, 110.
McCance, R. A.—1936, *Lancet*, 1, 643.
Oliver, T. H., Wilkinson, J. F.—1933, *Quart. J. Med.*, 24, 431.
Parsons, L. G.—1938, *Lancet*, 1, 65.
Shourie, K. L. and Narendrasingh—1938, *Ind. Jour. Med. Res.*, 25, 3, 655.
Shankaram, G. and Rajagopal, K.—1938, *Ind. Jour. Med. Res.*, 25, 3, 753.
Vinson, P. P.—1922, *Minnesota Med.* 5, 107.
Witts, L. J.—1930, *Guys. Hosp. Rep.*, 80, 253.
Witts, L. J.—1931, *Brit. Med. J.*, 11, 883.
Wilkinson, J. F.—1936, *Brit. Med. J.*, 1, 953.
Widdowson, E. M. and McCance, R. A.—1936, *Jour. Hygiene*, 30, 36.
Whitby, E. H. L. and Britton, C. J. C.—1937, Disorders of the Blood, 2nd Ed., London.
Vaughan, J. M.—1937, The Anæmias, 2nd Ed., London, p. 60.
Ungley, C. C.—1938, *Lancet*, 1, 875.

A NOTE ON THE IMPORTANCE OF A THOROUGH BACTERIOLOGICAL EXAMINATION OF ALL CASES OF CLINICAL LEPROSY

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In 1873, G. Armauer Hansen discovered Mycobacterium lepræ, the causative organism of leprosy. He found them in the leprous tissues he was examining. The controversy that centred round its ætiological relationship to leprosy was long and interesting. Though he was adversely criticised and even ridiculed at the time, it was in due course accepted by all as the organism responsible for the causation of leprosy. It is true that it has not satisfied all the Koch's postulates. Though Hansen saw these organisms only in the leprous skin nodules, the spleen, the liver and particularly the lymph nodes, later observers have been able to detect them also in the nasal mucous membrane, lungs, affected nerves and even in the peripheral blood. Mycobacterium lepræ may also be seen in the saliva, tears, sweat, milk, urine, fæces, seminal and vaginal discharges and the sputum. The importance of Hansen's discovery cannot be exaggerated as the demonstration of this organism is absolutely diagnostic and may be possible before other evidences of the disease become manifest.

Ten years after this epoch-making discovery, Arning, working in Hawaii, demonstrated the bacilli in the affected nerves. In 1891, Looft showed them for the first time in typical leprous macules or leprides as he called such macules. It was Jeanslme in 1897 who first found the bacilli in the nasal mucous membrane. The importance of this observation lies in the fact that the nose and the ear lobes, though apparently healthy looking, often show the organism in the early stages of the disease, but only very rarely in the healthy contacts and then only in the former position. Its importance from the public health point of view should also be remembered; for these bacilli are widely disseminated with the nasal secretions and during sneezing. Fortunately, leprosy patients often suffer from a form of dry rhinitis and even a chronic nasal catarrh usually becomes dry with the onset of leprosy. Scrapings from the mucous membrane covering the anterior third of the septum or the inferior turbinate bone yield in cases of leprosy a good percentage of positive bacteriological results. Cases with marked lesions on the face are almost always positive to this test and those with ulceration in the nose are invariably so. It has been the experience of many observers that a dose of potassium iodide (5-10 grs.) administered by mouth twenty-four hours before taking the specimen, resulted in facilitating the detection of M. lepræ, thus materially increasing the percentage of positives. Our routine examination indicated, that even without such auxiliary aids, a greater percentage of positives can be obtained by careful examination.

Beginning from the latter part of 1934, two hundred and twenty-seven consecutive cases of clinical leprosy, from the leprosy clinic of the King George Hospital, Vizagapatam, were subjected to a single thorough bacteriological examination. Materials for examination were collected on their first visit and these were later examined in the bacteriology department of the college. To eliminate all possible personal errors the smears were all taken by the same person (V. G. N.), and the examination was conducted by the other. Smears from the nose and the ear lobe were taken from all cases whether the latter situation appeared affected or normal and in sixty-two of these cases skin clip smears were also taken from the patches, cutaneous or neural. A sterile and flamed lupus scraper was used for taking nasal

smears. The mucous membrane covering the anterior third of the nasal septum or the inferior turbinate bone was scraped lightly till blood staining was noticed on the blade. The scraping was then smeared on a clean and flamed slide which was carefully labelled. Before taking the skin clip smear, the site was cleaned with spirit and swabbed with tincture of iodine and with a pair of sterile, sharp, curved scissors a small clip was made from the part held tightly between the fore-finger and the thumb of the left hand. The clips were 3 or 4 m.m. long and just skin deep. By the help of a flamed dissecting forceps the clip was then carefully transferred to a clean, flamed slide with the cut surface touching the slide. The clip was crushed between the forceps while rubbing on the slide a number of times.

The smears were fixed on flame and stained with carbol fuchsine steaming for 5 minutes. They were then washed and decolourised with 10% hydrochloric acid in alcohol, again washed and counterstained with Loeffler's methylene-blue for two minutes and finally washed, dried and examined. The staining and examination of all the slides were conducted by the same person. (N. G. P.). Before declaring a slide negative not less than two to three hundred fields were examined. The results are given below in tabular form.

TABLE I

Type of cases.	Number of cases.	Nose		Ear		Patches		Remarks	
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.		
N1	77	14	63	31	32	6	20		
N2	64	26	37	34	29	7	9	Neural ...	147
N3	6	0	5	2	2	7	1		
C1	5	2	3	2	1	1	0		
C2	7	6	1	6	1	1	0	Cutaneous ...	15
C3	3	3	0	3	0	3	0		
N1C1	7	5	2	3	4	1	1		
N1C2	3	2	1	3	0	0	0		
N1C3	0	0	0	0	0	0	0		
N2C1	19	10	7	18	0	4	2		
N2C2	29	23	6	28	1	1	1	Mixed ...	65
N2C3	4	3	1	3	0	1	0		
N3C1	1	1	0	1	0	0	0		
N3C2	1	1	0	1	0	1	0		
N3C3	1	1	0	1	0	1	0		

TABLE II

	N1	N2	N3	C1	C2	C3	N1C1	N1C2	N2C1	N2C2	N2C3	N3C1	N3C2	N3C3	Total
N+E+	10	17	0	1	6	3	3	2	10	22	2	1	1	1	79
N−E−	39	17	2	1	1	0	1	0	0	0	0	0	0	0	61
N+E−	4	8	0	0	0	0	3	0	0	1	0	0	0	0	16
N−E+	20	16	2	1	0	0	1	1	6	6	1	0	0	0	54
TOTAL	73	58	4	3	7	3	8	3	16	29	3	1	1	1	210

N = Nose; E = Ear lobe.

From these tables it will be seen that:—

(1) Out of the 227 cases examined, clinically 147 (64·75%) were purely neural, 15(6·6%) cutaneous and 65 (28·6%) mixed types. This shows that the neural cases predominate over the cutaneous in this unselected series. But if the cutaneous and mixed types are taken together, the disproportion is much less striking.

TABLE III

	N_1	N_2	N_3	C_1	C_2	C_3	N_1C_1	N_1C_2	N_2C_1	N_2C_2	N_2C_3	N_3C_1	N_3C_2	N_3C_3	Total
N+E+P+	2	3	0	0	1	3	1	0	2	4	2	0	1	1	20
N−E−P−	15	3	1	0	0	0	0	0	0	0	0	0	0	0	19
N−E+P−	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7
N+E−P−	2	3	0	0	0	0	1	0	0	0	0	0	0	0	6
N+E+P−	2	0	0	0	0	0	0	0	1	0	0	0	0	0	3
N−E+P+	3	1	0	0	0	0	0	0	1	0	0	0	0	0	5
N−E−P+	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL	30	13	1	0	1	3	2	0	4	4	2	0	1	1	62

N = Nose; E = Ear lobe; P = Patch.

(2) Of the 147 neural cases, 84 (57·27%) were positive; of the 15 cutaneous cases, 13 (86·66%) and of the 65 mixed cases, 63 (97·7%) were positive for M. lepræ.

(3) Of the 147 purely neural cases, 40 (27·21%) gave positive nasal smears; 67 out of 130 (51·54%) showed positive ear clip smears; and 14 out of 44 (31·81%) smears from patches were positive. It is

TABLE IV

Name of observers.	Number of cases examined.		Percentage of positives for M. Lepræ.
AUCHE	64		75
DES ESSARTS and LEFROU ...		Anæsthetic Macules	18
HOLLMANN	58	Nodular	89·6
	6	Mixed	66·6
	11	Neural	45·9
JEANSELME	26	... ...	61·5 Nasal.
KALLS	45	Skin	100
	30	Mixed	73·33
	60	Anæsthetic	35
KITASATO	68	Healthy persons, children of lepers or those living with them	11·7
GIRARD and HERIVAUX		Mixed	71 Nasal.
		Neural	14 Nasal.
LEBOEF	25	Nodular	84
	105	Mixed	92
	74	Neural	47
LEGER MARCEL		Skin	86 Nasal.
		Neural	46 Nasal.
LIE	50	Nodular	92
	92	Neural	4
LOWE and CHRISTIAN	160	... ...	40·6 Nasal.
			65 Skin.
			80 Ear.
MOUTOUSSIS		Neural	66 Blood.
		Tuberous and Mixed	100 Blood.
RAMSAY		Maculo-Anæsthetic	9·7
		Nodular	85·2
		Mixed	60·7
ROGERS and MUIR	206	Skin	37
	103	Neural	3·8
ROUSSEL, J. N.	17	Maculo-Anæsthetic	35·3
	10	Nodular	100
STRICKER	153	... ...	83·66 Nasal.
Series under review	15	Skin	86·66
	65	Mixed	97·7
	147	Neural	57·27

also interesting to note that of the six N_3 cases examined, none showed the bacilli in the nose, but two out of four were positive in the ear clip and one in the fluid aspirated from a trophic blister. Taking the 15 cutaneous cases, the organism was seen in the nasal smear in 11 out of the 15 (73·3%), in the ear clip in 11 out of 13 (84·6%) and in the patch in 5 out of 5 (100%). In the 65 cases of the mixed types, the organism was found in the nose in 46 out of 63 (73%), in the ear lobe in 58 out of 63 (92%) and in the patch in 9 out of 16 (69·23%).

(4) Of the 210 cases whose nasal and ear clip smears were examined, 79 (37·6%) showed the bacilli in both; 61 (29·5%) were negative in both ear and nose; 16 (7·6%) were nose positive and ear negative and 54 (25·7%) were nose negative and ear positive.

Discussion

Two hundred and twenty-seven consecutive cases of clinical leprosy were examined for the detection of M. leprae and 160 of them (70·48%) were positive. Only a single but thorough examination was made in all cases. Repeated examinations of the negatives might have increased the percentage of positives. Of the 227 cases 147 were neural and 84 of them (57·27%) were positive and 40 of the 84 (47·6%) were positive in the nasal smear. This agrees with the results obtained by other observers as shown in Table IV; *e.g.*, 45·9% Hollmann, 35% Kalls, 46% Marcel and 47% Leboef.

But Lie, and Rogers and Muir had only 4 and 3·8 per cent. positives respectively. The neural cases are generally regarded as non-infectious as the bacilli are considered to be few in the body, as there is an absence of "leprotic changes in the skin" and "as no bacilli could be obtained from the accessible lesions by the ordinary methods of examination." So, in such cases there is a tendency on the part of the physician to neglect the bacteriological examination; for, he considers such examinations futile and a waste of valuable time. It has been taught in the past that the chief characteristics of the nerve leprosy were "anæsthesia to light touch, and absence of bacilli on bacteriological examination." Klingmuller, while reviewing the recent works on "Lepra" (1935), observed "Moutoussis found the organism in the blood in 66% of the cases of nervous leprosy and in almost 100% of cases of tuberous and mixed forms." Many workers in the field have been able to show not rarely the presence of M. lepræ in the purely neural cases in the nose, ear lobes or in the patches. When the bacilli are present in the skin and "there are now few leprologists who doubt these lesions are due to the presence of bacilli" (Wade, 1936), there is a possibility of disseminating infection through this route (ear lobe or patch) and through the nose by sneezing or with the nasal discharge when the nasal mucosa is affected. Is it safe to consider these neural cases as non-infectious and not dangerous to the public? Is it safe to permit such patients to mix freely with the general population, and to continue their avocation in life probably imperilling those who employ them and those with whom they work. Such neural cases are more common among children and adolescents, *i.e.*, among the school-going population, who freely intermingle constantly. This is the most susceptible period of life. From the above it would seem only right from a public health point of view to treat them as infectious; and therefore to group them in the same category as those with cutaneous lesions. Paul Barghar, in his paper on "Leprosy Problems" (*Munchen. med. Wchnschr.* 82:56, Jan. 10, 1935) abstracted in the Year Book of Dermatology and Syphilology, 1935, writes "Leprosy must be regarded as an unusually contagious and easily transmissible disease". Lowe (1932) while writing on the present outlook of leprosy in India, observed "many cases of leprosy either show no lepra bacilli on examination or else do not discharge any bacilli, so they are apparently non-infective" and considered this to be "fairly clearly established in India". So when the bacilli are not demonstrable he considered them only "apparently non-infective". In the report of the leprosy conference held at Batavia (Feb. 1936) by Dr. Lamp, Director, Queen Wilhelmina Institute for Leprosy Research, Batavia, it is stated "Leprosy is a dangerous, infectious disease. . . . . Leprosy is a treacherous disease, for even the apparently innocent neural cases may give rise to infection. (*Int. Jour. Lep.*, Vol. V, No. 1, 1937, p. 105).

In these circumstances and in view of our present incomplete konwledge about leprosy and the related problems, it seems safer to consider as infectious all patients showing M. lepræ in the nose, ear lobe or macule whether they show any leprous lesion on the

skin or not. Lowe (1936), Wade (1936) and others have succeeded in showing M. lepræ in both the annular and thick macules; but still, due to difference in the pathology between a macule and a leprous lesion, they prefer to classify such macular lesions under the neural or maculo-anæsthetic type—a type of leprosy the chief features of which are considered to be anæsthesia to light touch and absence of bacilli on bacteriological examination. It is generally believed that neural leprosy is non-infectious and that bacilli are absent in the macules, nose or ear lobes. Therefore no serious attempt is made to examine for the bacilli in such cases. A large number of these neural cases can be shown to be positive for M. lepræ, and so it seems necessary to impress on the students, who are the future practitioners, to consider every leprosy case to be infectious until the contrary is proved by repeated negative bacteriological examinations of the nose, ear and macules. The bacteriological study of these cases also brings out that either there are multiple portals of entry for these organisms or there is considerable cutaneous dissemination of the bacilli long before any evident, active, localized pathological changes appear. Some of these cases have shown positive smears from clips taken from " silent areas," often an apparently normal ear lobe and rarely other situations. It is also possible that the bacilli, after gaining entrance into the host, lie latent for varying lengths of time or remain so permanently never to be activated or stimulated to multiplication. In the former case the bacilli would seem to multiply when the resistance of the host is lowered or when a change in the tissues is brought about by another disease process. Their multiplication may also be so slow as not to produce any reaction of the surrounding tissues or any local or general clinical manifestation. From our observation, limited as it is, we are inclined to believe that the explanation for the low percentage of positives in neural cases may be sought for in the theory of a non-acid-fast or granular stage of the organism during its evolution in the host.

Summary

1. An unselected series of 227 cases of leprosy were examined for the detection of M. lepræ and the results are given in tabular forms.

2. 57·27% of the 147 neural cases showed M. lepræ, a fairly high percentage. Apparently healthy areas have yielded positive results in a number of cases.

3. Failure to detect bacilli by a single examination is not enough to establish a contrary diagnosis in doubtful cases. There is no evidence to prove that paucity of bacilli in a case argues for its non-infectiousness. Hence it is considered safer to treat all cases as infectious.

4. In view of the above findings it is also considered necessary to lay special emphasis on the point that long and repeated bacteriological examination is essential in all cases whether neural or otherwise.

5. Either there are multiple points of entry or there is wide cutaneous dissemination of bacilli long before active localized lesions appear.

We are deeply grateful to Dr. C. Ramamurti, Professor of Bacteriology, Medical Collegs, Vizagapatam for permission to publish these results.

References

1. Des Essarts , J. Querangel and Lefrou, G.—*Bull. Acad. Med.*, 1934, April 17, 98th year, 3rd ser., Vol. III, No. 14 (*Abstract in Trop. Dis. Bull.*, 1934, August, Vol. 31, No. 8).
2. Girard, G. and Herivaux, A.—*Bull. Soc. Path. Exot*, 1931, January 14, Vol. 24, No. 1 (Abstract in *Trop. Dis. Bull.*, 1931, August, Vol. 28, No. 8).
3. Klingmuller—*V. Dermat. Ztchr.*, 71:219, June, 1935. (Abstract in the Year Book of Dermatology and Syphilology, 1935).
4. Leger (Marcel)—*Presse. Med.*, 1928, December 19, Vol. 36, No. 101. (Abstract in *Trop. Dis. Bull.*).
5. Sir Leonard Rogers and Ernest Muir—Leprosy, John Wright & Son, Ltd., Bristol, 1925.
6. Lie, H. P.—*Int. Jour. Lep.*, Vol. 2, No. 4, 1934.
7. Lowe —*J. Lep. India*, Vol. 8, No. 3, 1936.
8. Lowe—*Ind. Med. Gaz.*, April, 1932, Vol. 67, No. 4.
9. Ramsay, G. W. St. Cl.—*Trans. Royal Soc. Trop. Med. Hyg.*, 1928, No. 25, Vol. 22, No. 3. (Abstract in *Trop. Dis. Bull.*, April, 1929, Vol. 26, No. 4.
10. Roussel—*J. N. South M. J.*, 28:730, August, 1935. (Abstract in the Year Book of Dermatology and Syphilology, 1935).
11. Wade, H. W.—*Int. Jour. Lep.*, 4, 1936.
12. Wise, F. and Sulzberger, M. B.—Year Book of Dermatology and Syphilology, 1935. Year Book Publishers, Chicago.

RECENT ADVANCE IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS BY MEANS OF VACCINE

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Evolution of Vaccine Therapy in Tuberculosis

The phenomenal success of specific therapy in certain diseases acted as a source of inspiration for the workers in different countries for finding out a suitable specific for tuberculosis also. Their repeated attempts had not all been crowned with success. From the time of Robert Koch, the discoverer of the bacillus a variety of preparation have come to the field under the name of "Tuberculin." They fall into three groups:—

(1) Those containing the exotoxin only, *e.g.*, Koch's old tuberculin T.O.T. and T.O.A., Deny's tuberculin known as B. F. (bouillon filtre), etc.

(2) Those containing endotoxins chiefly, *e.g.*, Koch's "new" tuberculin T. R.

(3) Those that are mixtures of endo- and exotoxins, the most important one being (a) Koch's bacillary emulsion B. E., (b) the sensitised bacillary emulsion S. B. E. and (c) Beraneck's tuberculin T. Bk.

The Therapeutic Substances Act, 1925 of England, has called these third group of tuberculins "Tubercle Vaccines."

Tuberculin treatment has not fulfilled the high hopes held out on its introduction by Koch.

Various sera have also been prepared and tried amongst others by Marmorek and Maragliano, but without any success.

Of late years there has been a reaction in favour of vaccine therapy. Recently, various attempts have been made in improving the vaccines by removing, as far as possible, the fatty and waxy constituents from the tubercle bacilli before preparing a vaccine from them. One of the best known of these is the "Diaplyte" vaccine of Dreyer. These have also their drawbacks.

Discovery of A. O.—Its Special Features

Prof. Arima of Osaka, Japan, with Drs. Aoyama and Ohawa started investigations in this line and after continuous hard work for nearly 20 years has succeeded in discovering A. O. which is a polyvalent vaccine of human type and is sterile and yet possesses the protoplasm of the tubercle bacilli preserved in natural condition. It is, therefore, easily absorbable and harmless to the human organism. It is made from bacilli possessing a high degree of immunising power. The improved quality and consequent efficacy of A. O. vaccine is due to its special method of preparation. Dr. Arima removes fatty and waxy substances from the bacilli by adding a saponin, extracted from the skin of Japanese soap-berries, to the culture medium. This process retains the natural conditions of the protoplasm of the bacilli, which is destroyed, if other chemical processes are taken recourse to for fat-removal. Next the bacilli for A. O. preparation are put in a physiological saline solution and kept in a refrigerator for a year or longer, where they go without the warmth and nourishment necessary for continued life and with the lapse of time, entirely lose the function of multiplying or germinating but the full immunising power of the protoplasm remains intact. Three different strains of bacilli of high virulence and immunising power are selected for this vaccine. In addition, A. O. contains 0·5% carbolic acid. The standardisation is done with great caution—only such a dose is selected as will produce beneficial effects of a healing nature.

The special feature of the A. O. vaccine is that, in addition to being a curative agent, it may be used with great advantage in the diagnosis, in ascertaining the prognosis in cases of tuberculosis and also in prophylaxis.

DIAGNOSTIC USE OF A. O.—ITS ADVANTAGES OVER OTHER METHODS

Diagnosis of tuberculosis is not a problem in cases with clear signs and symptoms. Only the doubtful cases offer difficulty and the "indirect" methods have to be chiefly relied on in such cases. Of these methods some are "specific", others are not. Under the latter group we may mention the various attempts that have been made to utilise the changes in the blood picture in cases of tuberculosis.

Group "A"—Changes in the blood picture:—

(1) *Total leucocyte count*—Importance has been attached to the increase in the total number of leucocytes in tuberculosis affection by authorities like Sabin and Cunningham and Tompkins. Blumenfeldt also holds that the total number of leucocytes is somewhat higher in the tuberculous than in the healthy. But authorities like Maurice Fishberg consider this to be an inconstant phenomenon.

(2) The knowledge of *differential leucocyte count* has been sought to be utilised particularly by Tompkins and Cunningham in the diagnosis. They hold that the circulating monocytes are practically always increased in number in tuberculosis and further that monocytes of epitheloid type have not been observed in conditions other than tuberculosis. But these facts have not found support from other authorities.

(3) *Arneth's blood theory* of growth of neutrophiles and development of nuclear segments within these cells during the period, was sought to be made use of in the diagnosis, but had to be abandoned.

Group "B"—Specific tests:—

(1) *Complement-Fixation tests* on the lines of W. R. were tried, but the results had been conflicting.

(2) *Serum Agglutination with tubercle bacilli*—Attempts in this line also have failed to bring forth a reliable method to be of any use clinically.

(3) *Tuberculin tests* are applied in various ways.

(a) *The Subcutaneous method* introduces tuberculin directly into the circulation producing general and constitutional symptoms of tuberculin intoxication. Further, the latent lesions may be flared up. Neither is it dependable, because it may be positive in the healthy.

(b) *Mucous membrane method*—"Ophthalmo-reaction of Calmette"—Tuberculin in this method is applied to the mucous membrane (conjunctiva) for normal absorption. This has been discarded as being dangerous.

(c) *Von Pirquet's cutaneous test* is very simple but its practical value is doubtful.

(d) *Mantoux's intracutaneous test*—Intradermal injections of tuberculin is given. This test is of value in infants but it is hardly of any value in the adults. The specificity of the test has not been proved to the satisfaction of all. Rolly found that the skin reacted when inoculated with toxins of dysentery, typhoid, para-typhoid, cholera, etc., though the men tested never suffered from these diseases. Some workers (Sarbadhicary of Calcutta) lay stress on the fact that the dose of tuberculin producing the reaction is much less than that of the other toxins required for the purpose and specificity is claimed on this ground. For clinical purposes, however, the tuberculin test is of little value; because it shows not only active tuberculosis but also latent or healed lesions, that is, it shows only tuberculous infection. But in practice, we aim not only at the discovery of tuberculous infection, but that of the tuberculous disease. With this object in view, the introduction of A. O. into the field of diagnosis, may be considered as the latest. The use of A. O. as a means of diagnosis comes under two categories:

(1) The therapeutic administration in unknown cases and the resultant healing effect proving the nature of the disease.

(2) Certain prescribed fluctuations in the number of leucocytes per c.cm. of the patient's blood receiving the A. O. injection. This latter method, called Yoshida's Reaction (Y. R.) after its discoverer, Dr. Yoshida, determines

(a) Whether an individual is tuberculous or not.

(b) If so, whether the disease is in an active state.

(c) And finally, what may be the prognosis.

The technique of Y. R. is simple. Blood for total W. B. C. count is first collected from the

patient who should be fasting; then a hypodermic injection of A. O. is given to him in the proportion of 1 c.c. per 50 kilogrammes of body-weight. Since then 4 half-hourly collections of blood are made and the total leucocytes of each sample determined and compared. In the tuberculous cases, a certain specific decrease in the number of leucocytes will be found.

In weakly positive cases the decrease is from 1000-2000, but in about 2 hours the number (1) may go back to the original, (2) or beyond it, (3) or may not return to normal, but the decrease in this case is not above 1000.

In moderately positive cases the decrease is 2000-3000, in two hours after injecting, the number (1) may go back to normal, (2) or beyond it, (3) or goes on decreasing, but the primary decrease in this case being 1000-2000.

In strongly positive cases (1) the decrease is more than 3000, (2) or is between 2000-3000, but the number does not return to normal after two hours.

Weak reaction—tuberculosis lightly active.
Medium reaction—tuberculosis of middle activity.
Strong reaction—tuberculosis of severe stage.

Negative Y. R. is found in healthy persons or in persons with tuberculosis of non-active character or with other diseases. Negative Y. R. shows (1) increase above the original number, (2) or little decrease (less than 1000) half an hour after the injection and quickly tending to rise above the original, (3) or no fluctuations at all. The Y. R. fails even in persons with active tuberculosis if they had tuberculin treatment or Pirquet test, or other kindred specific things previously.

The Y. R. with A. O. has been tried by myself in the National Infirmary (National Medical Institute, Calcutta) and on other cases with the following results:—

Short history of the case.	Sputum.	Present weight of the patient.	Dose of A.O.	Total leucocytes per c.mm. before A. O. injection.	Total leucocytes per c.mm. every ½ hour after A. O. injection.	Subsequent reactions in the patients.
No. I. D—H. M., 22 years, with cough and fever, had hæmoptysis, cavity found on X-ray examination.	+ +	1 md. and 11 seers.	1 c.c.	7600	(1) 5300 (2) 5200 (3) 6100 (4) 6360	Nil.
No. II. K—H. M., 18 years, with cough and fever, diminished movements, increased V. R., bronchial breathing—small cavity on X-ray examination.	+ +	1 md. and 5 seers.	0·9 c.c.	6600	(1) 5100 (2) 5400 (3) 5800 (4) 7500	Nil.
No. III. B—H. M., 30 years, no manifestations of the disease clinically, has been coming in contact with dead bodies of tubercular patients for the last 7 years.	No expectoration.	1 md. and 15 seers.	1 c.c.	8200	(1) 7300 (2) 7500 (3) 8400 (4) 8800	Nil.

The results noted above corroborate the preceding statements. Further cases are also under investigation. I am thankful to Drs. B. K. Pal, S. N. Mitra, M. Bagchi, P. Mukherji, and Roy Chowdhury for their valuable help without which it would not have been possible for me to conduct this work.

Prognostic Use of A. O.

Regarding prognosis, conclusions are drawn from the results of the Y. R. as follows:—

Prognosis is unfavourable if after three therapeutic injections of A. O. the Y. R. remains strongly positive: whereas, if a previously strongly positive case tends to show a medium or weak reaction as a result of A. O. treatment, the prognosis is generally favourable.

Treatment by A. O.

Like any other vaccine, A. O. gives a stimulation to the organism so as to make it work out its own immunity. An organism which has lost its power to respond to the stimulus, ceases to be benefited by it, like cases in the advanced stages. But that the early and medium cases are benefited much by A. O. treatment can be easily ascertained from the literature. Greatest healing effects are found in cases of regional tuberculosis, *e.g.*, purely surgical cases, ocular tuberculosis, glandular tuberculosis, etc. Besides their own, the high statistics (about 38,681 cases) collected by the discoverers from the hospitals and the practising physicians using A. O. from different parts of Japan, show 91·4% cases in glandular cases, 83·3% in bones and joints affections, 91·4% in ophthalmic cases, 90·3% in pleurisy and peritonitis cases, and 94·5% in early pulmonary tuberculosis cases (including the partially cured cases).

In Germany, A. O. has been used by some and has gained appreciation there. Dr. Rosenfeld of Stuttgart, Germany, reported about a case of tubercular fistula of testes treated with A. O. The patient later died of Addison's disease. Post-mortem examination of the body revealed healing of all tuberculous foci in different parts. In fact, A. O. caused such a favourable impression on the continent that Prof. Arima was specially invited to lecture on it at the conference held at Konigsberg in September, 1930. In India, Dr. B. P. Banaji, F.R.C.S.I., writing in the *Indian Medical Gazette* as recently as April, 1936, commends it highly in tubercular keratitis, iritis, and retinal hæmorrhages in the young. Dr. B. V. Paranjpe says, in the *Medical Digest* of February, 1936, "It is the best form of tubercle vaccine."

Prophylactic Use of A. O.

The scheme of prophylactic use of A. O. for conferring immunity against tuberculosis is as follows:—

During the 1st Year:—5 hypodermic injections of A. O. No. 2 (double the strength of No. 1) are given at fortnightly to monthly intervals.

During the 2nd year:—*i.e.* one year after the 1st injection of the 1 course, A. O. No. 3 (three times the strength of No. 1) is given every 4 months, thrice during the year. No further injections are necessary if everything goes on well after this course. But others experiencing some sort of uneasiness still may be given 3 injections of No. 3 every 4 months during the 3rd year.

My investigations could not be carried on a suitable scale mainly due to the late arrival of the samples of A. O. I have a mind to follow up this work. The chief object in presenting this scanty data to you, is to invite your attention to the great possibilities of this vaccine in all the different fields, *e.g.*, of diagnosis, prognosis, prophylaxis and treatment. Considering the heavy toll taken by tuberculosis, every year in our country, perhaps the heaviest in the world, I make no apology in appealing to you all for exploring this avenue of approach to our goal, the amelioration of human suffering.

JOURNAL
OF
THE INDIAN MEDICAL ASSOCIATION

Vol. VIII NOVEMBER, 1938 No. 2

THE INDIAN MEDICAL COUNCIL: A RETROSPECT

With the last session of the Medical Council of India held at Delhi on 24th and 25th October, 1938, has terminated the life of the first Council which was constituted in February, 1934, as a result of the passing of Act No. XXVII of 1933 by the Indian Legislature. The Act received the consent of the Governor-General on the 23rd September, 1933 and came into force on the 1st of November of the same year; the first meeting of the Council was held on 9th and 10th March, 1934. The Council has since then met twice every year and has thus had ten sessions during the last five years. It will be interesting to review the sum total of work done by the Council during the first term of its existence.

The Act, which gave birth to the Council, placed on it responsibility, amongst others, of maintaining a uniform minimum standard of higher qualification in medicine for all provinces of India and of settling schemes of reciprocity with the authorities of States or countries outside British India, which are entrusted by the laws of such States or countries with the maintenance of a register of medical practitioners, for the recognition of Indian medical qualifications in those States and countries, with its corollary, the reciprocal recognition in this country of approved qualifications of those States and countries. It should be noted, therefore, that in the main the scope of the Act was very limited and particularly defective in the fact that while it empowered the Council to enter into negotiation, with a view to establish reciprocal relationship, with a State or country outside British India which maintained a Register of its medical practitioners, it did not arm the Council with that effective weapon with which such negotiations can be brought to a successful termination, *viz.*, the maintenance of a Register of its own. The Indian Medical Association had pointed out this glaring defect in the provisions of the Act at the time it was circulated for opinion in the form of a Bill and it will be seen later how the omission of this important provision has resulted in the compromise of India's honour and dignity in the matter of the schemes of reciprocity that have been established between the Indian Medical Council and the Councils of those countries outside British India that have recognised the approved degrees granted by the British Indian Universities.

The other unsatisfactory features of the Act establishing the Council to which pointed reference has been repeatedly made in the columns of this Journal and in the addresses of the successive Presidents of the All-India Medical Conference at its annual sessions and in various statements published from time to time by the Hony. General Secretary of the Indan Medical Association, were its provisions relating to the constitution of the Council, the exclusion of the licentiates from the purview of the Council, the nomination of the President and the appointment of the Secretary by the Governor-General-in-Council for four years from the first constitution of the Council and the automatic registration in the Provincial Medical Register of India for the first four years after the commencement of the Act, of all medical qualifications which were

recognised by the General Medical Council of the United Kingdom although Indian medical degrees continued to remain under a ban in Great Britain and the Dominions.

It will not be out of place to compare for the information of our readers the present constitution of the Council in India with that of the General Medical Council of the United Kingdom.

Medical Council of the United Kingdom:—

	Indian Medical Council	*General Medical Council*
Representatives of Universities and Licensing Bodies	7 (23·3%)	27 (71%)
Govt. nominees	15 (50%)	5 (13%)
Representatives of Registered practitioners	8 (26·6%)	6 (16%)
Total	30	38

The figures are self-explanatory and require no comment. The total number of members of the Indian Medical Council at the time of its first constitution and today has remained the same, *viz* 30; but since the creation of the two new provinces of Orissa and Sind, the separation of Burma and the adaptation of the Indian Medical Council Act, 1933, by the Adaptation of Indian Laws Order, 1937, the relative strength of the nominated and elected members of the Council has suffered a change in that while, before the Government of India Act, 1935, came into operation, the ratio of the elected to nominated members was 16 to 14, it now stands at 15 to 15. It will thus be clearly seen that while there was a very faint ray of hope before April, 1937, of the elected members combining solidly against the nominated block in the Council on issues of national importance or affecting the fundamental interests of the profession, there is absolutely no chance now of the elected representatives of the Universities and the practitioners (even if it was possible for all of them to take their stand together on a vital issue) carrying anything against the wishes of the nominees of the Central and Local Governments who can always count upon the casting vote of the President, who happens to be the Director General of the Indian Medical Service, in their favour. The irony of the situation has been heightened by the fact that while, before the new constitution came into operation, the representative of each Governor's province was to be nominated by the local Government of the province, the Adaptation of Indian Laws Order, 1937, has taken this right of nomination from the hands of the local Government and vested it in those of the Central Government. It will be further seen from the comparative figures given above how the representatives of the Universities who, by common consent, must have a predominant voice in matters educational, have been given the least strength in the composition of the Indian Medical Council, *viz.* 23% as against 71 % enjoyed by their counterpart in the Council in the United Kingdom, although the functions of both the Councils are largely concerned with control and supervision of medical education. And yet, with a Council constituted as above, the late Mian Sir Fazli Hussain, who, as member in charge of the portfolio of Education, Health and Lands, piloted the Bill through the Indian Legislature in 1933, expressed the hope that it will secure "efficiency at home and honour abroad"! What honour this pet child of the late Sir Fazli has secured for his country abroad will be apparent when we come to discuss the achievements of the Council in the matter of establishment of reciprocal relationship with the countries outside India for mutual recognition of their approved medical degrees.

Another fundamental mistake committed by the Olympian Gods of the Imperial secretariat who conceived the provisions of the Draft Bill and saw the latter through the Legislature against the universal opposition of the profession in India, was the omission of any provision in the Bill directing that the medical qualifications granted by medical institutions in British India and approved by the Council shall be automatically enrolled on all the Provincial Medical Registers of India although care was taken to provide in a separate section of the Bill that "The medical qualifications granted by medical institutions outside British India which are included in the second schedule shall be recognised medical qualifications for the purposes of this Act and shall be sufficient qualifications for enrolment of any Provincial Medical

Register". (The extent of solicitude of the late Sir Fazli Hussain's lieutenants for the holders of foreign medical degrees in India evidently knew no bounds.) The natural conclusion to be drawn from this omission in the Act is that the creators of the Council desired that while the Council should exercise rigid control over the education of the medical graduates of the country in order to establish "efficieney at home", it should be no business of the Council to see that it secures, for them automatic recognition by the Provincial Medical Councils which maintain the provincial Registers. The Indian Medical Council not maintaining a Register of its own, it is incumbent on all holders of medical qualifications included in the first schedule of the Indian Medical Council Act to approach the Provincial Medical Councils for registration of their qualifications for purposes of practice, legal status and official recognition. Such anomalous situation is observed in no other country which has a medical council worth the name. In all civilised countries the "qualified" men are subjected to the control of their medical councils in matters educational and disciplinary, in exchange for the right of automatic registration of their qualifications in the medical registers and other legal rights which such a registration brings in its train.

Another factor of extreme importance affecting the juridical rights of the Indian Medical Council has been introduced since the passing by the British Parliament of the Government of India Act, 1935, and its coming into force with effect from the 1st of April, 1937. Sections 119, 120 and 121 of this Act have considerably modified the powers of the Indian Medical Council in the matter of establishing a scheme of reciprocity with United Kingdom, Section 120 having laid down definitely that recognition in United Kingdom of Indian Medical degrees accepted as "sufficient" by the Indian Medical Council and recognition in India of British medical degrees approved by the General Medical Council would be automatic except on grounds of " insufficiency of standard" and subject to a right of appeal in case of each country to the Privy Council. What this right of appeal means financially to the holders of the Indian medical qualifications which are refused recognition in U. K. on the ground of "insufficiency" or to the institutions granting those qualifications, can better be imagined than described.

We have in this preliminary note gone in details into some of the major defects and deficiencies in the Act establishing the Medical Council of India and the limitations in the scope of the functions of the Council itself in order to bring into bolder relief the difficulties that confronted those members of the Indian Medical Association who were successful in being returned to the first Council as representatives of the Universities and the registered graduates and licentiates in their attempt at constructive work inside the Council and to supply the background against which the activities and achievements of the Council during the first five years of its existence are to be studied and analysed. They also indicate the extreme urgency of amending the Indian Medical Council Act at as early a date as possible to remedy the defects and deficiencies pointed out above. We shall revert to the subject in our next issue.

CASE NOTE

A CASE OF HIGH BLOOD PRESSURE TREATED SUCCESSFULLY WITH RAUWOLFIA SERPENTINA (TENSOLIN TAB.).

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Mrs. K. C. G., aged 47 years, a sufferer from high blood pressure (about 200 mm. systolic for the last one year) complained one evening of

(1) acute splitting headache over the vertex and throbbing pain in the neck and suboccipital region;

(2) throbing pain in the eyeballs;

(3) oppression over the præcordium and palpitation;

(4) spasmodic pain in the abdomen.

The appearance was very much flushed, the blood pressure was 260 m.m. and 140 m.m.

The patient was at once put to bed; ice bags applied; calomel gr. iii given followed by bromides gr. xx with sodium nitrite comp. tab—one every 4 hours. (Venesection was purposely omitted in view of the extreme nervous temperament of the patient). The patient had very little sleep that night.

On the 2nd day, the blood pressure was 235 m.m. and 135 m.m. The symptoms were the same as on the previous night. A dose of saline followed by bromides and nitrites and Jocapral one tablet t.d.s. given. At bed time Luminal 1 c.c. (20% sol.) was injected for pain and restlessness. The patient had slight relief.

On the 3rd day the blood pressure was 230 m.m. and 135 m.m. Leeches were applied on the temples and the nape of the neck. Detensyl was added to previous day's treatment. Result not very satisfactory.

On the fourth day the blood pressure was 230 m.m. and 135 m.m. in the morning. Rauwolfia Serpentina (Vern. *chota chander*) (Tensolin Tablets—2 tab. t.d.s.) was given. In the evening the blood pressure came down to 195 m.m. systolic and 130 m.m. diastolic and all the symptoms disappeared. She had sound sleep at night for 6 hours.

The patient is since taking tensolin tablets (2 tablets) the blood pressure varies between 170 m.m. and 190 m.m. systolic and 125 m.m. and 130 m.m. diastolic.

I am thankful to Dr. N. R. Sen Gupta, M.D., and Dr. I. Basu, M.D. under whose guidance I treated the case.

CURRENT MEDICAL LITERATURE

MEDICINE

Chronic Leukæmia—Factors Influencing The Duration Of Life

Leavell (*Journal of American Medical Science*, September, 1938, page 329) observes that the average duration of life was 3·2 years in 87 cases with chronic myelogenous leukæmia and 3·6 years in 49 cases with chronic lymphogenous leukæmia, that about 80% survived for 1 year, 40% for 3 years, 20% for 5 years and 4% for 10 years or more. The author further points out that the duration of life depends on the amount of anæmia, leucocyte count and any bleeding before the treatment is begun as this is evident from the fact that in myelogenous type the life was shorter in cases with marked anæmia, low leucocyte count and the presence of bleeding before treatment and in lymphogenous type it was also shorter in cases with marked anæmia but slightly longer in cases with low leucocyte count.

Studies On Liver Function In Pneumococcus Pneumonia

Curphey and Solomon (*Journal of American Medical Science*, September, 1938, page 348) in reporting on the study of liver function in 80 cases of pneumococcus pneumonia observe that the urobilinogen excretion was increased in both fatal and recovered cases and markedly so in the fatal group and that the daily estimation of urobilinogen excretion revealed a gradual fall of its level in recovered cases with persistency or rise in the level in the fatal group. They also found that the icterus index was elevated both in the fatal and recovered groups in the early stage of the disease and that the level of icterus index had a tendency to fall in the recovered group and to rise in the fatal group. There was also a decreased levulose tolerance in a high percentage of cases in the early stage and whereas in the recovered cases there was a progressive increase in the levulose tolerance, in the fatal cases the tolerance progressively decreased.

Cysticercus Cellulosæ Of The Brain

Hare (*Journal of American Medical Association*, August 6, 1938, page 510) reports two cases of cysticercus cellulosæ of the brain in which autopsy records show that in one the parenchyma, meninges and the fourth ventricle are involved and in the other only the fourth ventricle with associated chronic basilar leptomeningitis.

Congenital Universal Insensitiveness To Pain

Ford and Wilkins (*Bulletin of the Johns Hopkins Hospital*, April, 1938) report three cases of children showing congenital indifference to painful stimuli resulting in one case to severe burns, multiple fractures and other injuries. The nervous system was otherwise unaffected. The author maintains that there is a defect in the development of the sensory nervous system involving specially the pain mechanism and the condition is comparable to congenital color blindness.

Rheumatoid Arthritis

Ellman and Lawrence (*Post-Graduate Medical Journal*, September, 1938, page 275) review the results of gold treatment in a series of sixty typical cases of rheumatoid arthritis which have been divided into three equal groups, *viz.*, (a) a control group getting injections of almond oil, (b) a group getting small doses of gold (maximum dose was 0·1 gm.) and (c) a group getting larger doses of gold (maximum dose was 0·2 gm.). The result is given in the table below:

	Group A	Group B	Group C
Joint disease was rendered inactive	5%	30%	50%
Joint swelling diminished	16%	79%	81%
Sedimentation rate reduced to normal	15%	40%	74%

The toxic manifestations of gold observed are grouped under two heads, *viz.*, (a) those symptoms which are of a transient nature, pass off despite continuation of gold therapy and do not carry any

serious prognosis and they are erythematopapular eruptions, pruritis, herpes labialis, dermatitis herpetiformis, urticaria, Quincke's œdema, albuminuria; (b) those symptoms which run a prolonged course, are progressively aggravated if gold therapy is continued and sometimes endanger the life of the patient and these are stomatitis, dermatitis of the squamous or exfoliative type, hepatitis and the blood dyscrasias.

Carbon-Dioxide Inhalation In Pulmonary Tuberculosis

Banyai (*Diseases of the Chest*, September, 1938, page 8) observes that the inhalation of carbon dioxide (the mixture of 10% carbon dioxide and 90% oxygen) will produce easy effortless expectoration, diminution of cough and relief from dyspnœa and will thus be very useful in cases of pulmonary tuberculosis where there is accumulation and retention of viscid tenacious secretion in the bronchial tract causing excessive cough and massive or patchy atelectasis. The evacuation of the bronchial tract by carbon dioxide inhalation results in opening up of the previously atelectatic areas and consequent relief of dyspnœa and cyanosis. Thus it is a safe and efficacious method of treatment of dyspnœa and atelectasis and management of cough in pulmonary tuberculosis. The contra-indications mentioned by the author are (a) hæmorrhagic tendencies, (b) marked emphysema, (c) widespread pulmonary fibrosis without atelectasis and with mucopurulent retention in the air passages, (d) active plastic pleurisy and pleural effusion, (e) hypertension, (f) when the cause of the cough and dyspnœa is outside of the lung and (g) extreme debility.

Antidotal Treatment Of Barbiturate Poisoning With Picrotoxin

Bleckwenn and Masten (*Journal of American Medical Association*, August 6, 1938, page 504) report excellent results obtained in six cases of barbiturate poisoning by picrotoxin. The authors mention amongst others the following as characteristic features of barbiturate intoxication, *viz.*, deep coma with small fixed pupils, corneal anæsthesia, low blood pressure, shallow respiration and fast weak pulse. For effective treatment of such a condition they recommend that the following steps should be taken immediately, *viz.*,

(1) Gastric lavage with potassium permanganate and purgation by leaving 2 or 3 ounces of sodium phosphate in the stomach after the last washing (mag. sulph. is a cerebral depressant and may be toxic to impaired renal system).

(2) Continuous oxygen administration by catheter method to overcome anoxia and cerebral anæmia.

(3) Administration of picrotoxin intravenously until the return of pupillary and corneal reflexes (1 in 1000 solution at the rate of 1 c.c. per minute).

(4) Administration of fluids by parenteral route and of sucrose intravenously to promote diuresis and to prevent acidosis.

The first noticeable effect of picrotoxin is an increase in the depth of respiration and rise in the blood pressure. The pulse improves in quality and becomes slower. The appearance of twitchings signals the approach of the convulsive stage.

Therapy Of Agranulocytosis

Ravina (*La Presse medicale*, June 8, 1938, page 907, *Ref. International Medical Digest*, September, 1938) mentions the following methods of treatment in agranulocytosis to be used together or successively or in combination with radiotherapy, *viz.*, (1) transfusion of blood from patients with leukæmia (Netousek)—to give the patient the material to form leucocytes; (2) transfusion of blood from febrile patient (Lainer)—the blood of febrile patient (produced by injection of 15 c.c. of milk) is rich in substances which stimulate bone-marrow and the lack of which is one of the main elements in agranulocytosis; and (3) administration of red bone-marrow (100 to 200 gms. from calves) or injection of an extract of red bone-marrow prepared according to a special method (Baumann). Though the proper assessment of the value of a therapeutic course in this condition is very difficult when so many methods are tried together or successively, it is desirable that no course should be left untried when one taken does not lead to prompt results.

Treatment Of Polycythæmia With Diet Poor In Protein

Lasch (*Medizinische Klinik.*, May 6, 1938), reports on the beneficial effect of diet practically devoid of protein in cases of polycythæmia. There is

a gradual reduction of the red cells with the improvement of the general condition of the patient though the spleen remains enlarged and the blood pressure and the leucocyte count unchanged. The reversion to normal diet gives rise to polycythæmia which can again be controlled with restriction of protein in the diet.

Herpes Zoster

Maplestone and Ghosh (*Indian Medical Gazette*, April, 1938, page 212) report on the success achieved in treating 40 cases of herpes zoster with hypodermic injection of tissue lysate obtained from the herpetic vesicles. The pain is relieved and the duration of the disease is shortened. The preparation of lysate is easy and the authors suggest its preparation on a commercial scale.

Gentian Violet As Therapeutic Agent

Sutton (*Journal of American Medical Association*, May 21, 1938, page 1733) reports very successful results with 1 to 2% aqueous solution of gentian violet in dermatological conditions due to staphylococcus aureas, gonococcus and C. diphtheriæ and in those due to monilia, and to a less extent to trychophyton, epidermophyton, torula and saccharomyces. Gentian violet is non-toxic and its only drawback is its color which can be removed from linen by repeated washing with water and alcohol or bleaching with chlorine.

Diet In Allergic Disease

Bray (*Practitioner*, July, 1938, page 97) summarises in the following words the points to be noted in selection and preparation of diet in allergic diseases, *viz.*, The best diet for an allergic individual apart from the avoidance of specific food sensitivities is one that (a) is simply compounded as regards its proportions of fats, proteins and carbohydrates and not excessive in any respect; (b) is well cooked to destroy any allergic properties as far as possible but not recooked or fried to render it indigestible; (c) of small but nutritious bulk so as not to cause gastric irritation; and (d) taken as early in the day as possible so that the major digestive process is completed before night when most allergic conditions tend to be more pronounced.

SURGERY

Surgery Of The Heart

O'Shaughnessy (*Practitioner*, May, 1938, page 603) writes that the rapid strides made during the last ten years have made the surgery of the heart of practical importance. He mentions some of the operations and deals with the mechanical principles on which they are based. The parietal pericardium is relatively inelastic and a rapid accumulation of fluid in the sac may cause cardiac compression and death. The right auricle is specially sensitive to pressure and venous return to the heart may soon be arrested. Paracentesis of the pericardium done from the costo-xiphoid angle is a safe procedure but the alternative parasternal route is dangerous as it may wound the lung, the internal mammary vessels and even the heart. In suppurative pericarditis the drainage operation done under local anæsthesia from the costo-xiphoid angle is often life-saving. Fibrous adhesive pericarditis is of two types. In the first type in which the heart is enlarged and there is visible retraction of the intercostal spaces, signs of compression of the lower lobe of the left lung and of congestive heart failure with associated disease of the mitral valve, the operation required is removal of the part of the rigid chest wall (excision of the ribs and costal cartilages overlying the heart as proposed by Braurer). But in the second type of adhesive pericarditis in which the heart is small, there is œdema of the legs, ascitis and enlargement of the liver, the venous pressure is very high (300 mm. of water—four times the normal value), an actual excision of the fibrous pericardium which is encasing the heart and impeding the venous return must be done.

Marked dyspnœa in cases of mitral stenosis produced by direct pressure of the greatly enlarged left auricle on the region of the bifurcation of the trachea may be relieved by operation on the chest wall.

The space occupied by the great vessels, œsophagus and trachea as they enter the thorax are very small and the boundaries of the thoracic inlet are rigid so that any encroachment of the space by tumor or aneurism is followed by such symptoms as dysphagia, stridor, dyspnœa with œdema and con-

gestion of the head, neck and upper extremities and these symptoms can alone be relieved by such operation as sternal decompression.

For treatment of essential hypertension such radical operations as section of a series of anterior nerve roots (after laminectomy) and sections of both splanchnic nerves, the upper part of the lumbar sympathetic chain and removal of the adrenal glands have been done, but the author recommends a simpler method of section of both splanchnic nerves just before they pass through the diaphragm and this only in cases who will show an appreciable fall in the pressure after a period of rest in bed and whose vessels retain some measure of contractility.

For the relief of cardiac pain the method of treatment now in common use is an injection of the paravertebral mediastinal plexus through which pass most of the pain impulses.

In coronary disease producing definite cardiac ischæmia with or without angina the operative treatment of revascularisation of the heart is often very useful. The author originally used a pedicled graft of the omentum and sutured it to the heart. More recently other modifications have been made to suit the individual need.

Anæsthesia In Cardiac Surgery

Hasler (*Lancet*, August 20, 1938, page 436) in a meeting of the pharmacological section of the British Medical Association read a paper on the subject giving in it his experience gained in the cardiac clinic of Lambeth Hospital under Prof. O'Shanghnessy. The routine procedure adopted in the clinic is to give the patient sufficient basal anæsthetic before operation. In the evening before, he is given a sleeping draught containing chloral hydrate and bromide. One hour before operation he is given omnopon gr. 1/3 and scopolamine gr. 1/150 by mouth and half an hour before Nembutal gr. 1½ by mouth. If the patient is not asleep by half an hour Nembutal is repeated and the operation postponed. Induction is started with ethyl chloride followed by ether on an open mask; anæsthesia is maintained by ether and oxygen mixture supplied by a Tiegal Henle machine. Positive pressure is maintained by a device which forced the patient's expiration under water. When the chest is opened and the lung collapses the anæsthetic mixture is supplied with positive pressure which is increased while the chest is being closed.

The Effect Of Direct Application Of Cod-Liver Oil On The Healing Of Ulcers Of The Feet In Patients With Diabetes Mellitus

Brandaleone (*Annals of Surgery*, July, 1938, page 141) gives in the following lines the summary of his observations on the effect of topical application of cod-liver oil on ulcer of the feet in diabetic patients:

Eleven diabetic patients with ulcers of the feet treated with routine care were studied for periods of one to 32 weeks. In this group three lesions remained unhealed, nine were improved, one healed completely and eight recovered.

Twenty-one diabetic patients with ulcers of the feet, which had existed for periods varying from 1 to 36 weeks were treated by topical application of cod-liver oil in addition to routine foot care.

All these patients had been treated with routine foot care prior to cod-liver oil therapy.

In 20 of these 21 patients complete healing of the ulcers followed the local application of the cod-liver oil. The average time required for healing to take place was 10·1 weeks.

The average duration of these ulcers prior to the therapy was 24 weeks.

PEDIATRICS

Jaundice In Infants

Steen (*Practitioner*, June, 1938, page 705) considers the problem under two groups: (1) Jaundice during neonatal period and (2) jaundice in later infancy. The jaundice during the neonatal period will be one of the six conditions: (a) icterus neonatorum, (b) icterus gravis neonatorum, (c) congenital stenosis of the bile ducts, (d) congenital syphilis, (e) sepsis neonatorum and (f) congenital acholuric jaundice.

Icterus neonatorum is a true hæmolytic jaundice and there is a strongly positive indirect reaction to the van den Bergh test in the blood. Hæmolysis is due to the rise in the oxygen tension of the blood which accompanies the change from placental to pulmonary respiration. Jaundice starts usually from

the second to the fifth day and lasts for about a week but sometimes longer. No treatment is necessary. Any meddlesome interference with calomel or the like is only liable to do harm.

Icterus gravis neonatorum has the remarkable feature of familial incidence. Here either the physiological hæmolysis is uncontrolled or some unknown toxin causes hæmolysis. The jaundice is early and rapidly progressive. There is strongly positive indirect van den Bergh reaction in the blood and also a severe anæmia of the high color index hyperchromic type with a large number of nucleated red cells. Treatment consists of 10 to 20 c.c. of parental serum or whole blood injected intramuscularly and repeated daily until improvement occurs; if not, blood transfusion is necessary—10 c.c. per lb. of the infant's body weight are to be given in the internal saphenous vein at the ankle or failing this, into an arm vein. This treatment if started early will cure many patients but in some are often left such sequelæ in the form of cerebral lesions leading to spastic diplegia or other forms of mental deficiency.

Congenital stenosis of the bile ducts shows jaundice appearing usually from the birth or shortly after birth and steadily progressing. Bile is present in the urine and absent from the fæces unless the obstruction is partial; direct reaction with the van den Bergh test is present; the liver is enlarged and hard; the spleen may be enlarged; the blood picture is normal and there is no increased fragility of the red cells; prognosis is grave, death taking place within six months. No medical treatment is of any use; surgery has been attempted but without success.

Congenital syphilis show jaundice only in 1% of the cases and even in this it is not intense. Jaundice is due to syphilitic hepatitis and appears usually later, not until after the 6th week. Blood picture may show a secondary anæmia; the liver and the spleen may be enlarged; W. R. should be positive in both mother and child; X-ray may reveal characteristic changes in the long bones. In treatment arsenical preparations are best avoided and the choice lies between bismuth and mercury. One of the soluble preparations of bismuth such as Thio-bismol (0·01 gm. dissolved in a few minims of water for an infant) may be given intramuscularly twice a week for six or eight injections followed by a course of injection of an insoluble preparation such as Bismostab (0·2 gm. in 5 c.c. of isotonic glucose—3 to 4 minims of this for an infant) twice a week for six or eight injections. Mercury may be given as hydrarg. cum creta grain 1/6 to 1/4 by mouth twice daily and unguentum hydrargyri grains 5 given by inunction once daily, varying the site for six weeks.

Sepsis neonatorum is not very common and is due to umbilical sepsis causing thrombophlebitis in the portal vein involving the liver. It is usually fatal. Sulphanilamide may be tried with advantage if streptococcus hæmolyticus is the offending organism.

Acholuric jaundice is hereditary type of hæmolytic jaundice and associated with increased fragility of the red cells and the enlargement of the spleen. Jaundice is not well marked until it is a few months old. Splenectomy is contra-indicated at this age.

Jaundice occurring for the first time in the later infancy is very rare. Though jaundice due to chemical poisons (N. A. B.) or bacterial toxins (spirochætes icterohæmorrhagica) may exceptionally occur the only likely cause for jaundice at this time is catarrhal jaundice and this also is very rare. The treatment is similar to that occurring in adult life.

Albuminuria In Childhood

Dietel (*Wiener klinische Wochenschrift*, June 10, 1938, page 628) deals with the subject under two main headings, *viz.*, (1) organic and (2) functional. Organic albuminuria is further grouped under (a) extra-renal which is an infection of the efferent urinary pathways and includes cystitis and cystopyelitis of acute and chronic varieties and (b) strictly renal including nephritis and nephrosis. The leading symptoms of extra-renal organic albuminuria are pyuria, fever, poor appetite, often diarrhœa and sometimes signs of meningeal irritation. The waxen color of the face is often pathognomic of the condition. Cultural examination of the urine is often helpful. Treatment consists of administration of abundant fluid and soft bland diet with urotropine and its derivatives (1 gm. per day for an infant); Prontosil may be useful and in cases of long course intramuscular injection of blood in 10 c.c. doses or in septic cases blood transfusion is necessary. In albuminuria due to the disease of the kidney (nephritis and nephrosis), hæmaturia and increase of blood pressure speak for

diffuse nephritis (focal nephritis is not associated with high blood pressure). Double refractive bodies and œdema with normal blood pressure and no hæmaturia speak for nephrosis. Treatment is chiefly dietetic, *viz.*, reduction of protein (chiefly in nephritis) and reduction of salts (chiefly in nephrosis). Sugar and fruit diet should be used in acute cases. Diuretics are indicated in presence of œdema. Protracted hæmaturia requires administration of calcium and vitamin C. If uræmia is threatened the following measures are taken, *viz.*, elimination of protein from the diet, the use of fruits and sugar, restriction of fluid if œdema is present or supply of fluid by enema or by subcutaneous or intravenous infusion of isotonic (4·5%) dextrose. In presence of spasm lumbar puncture is done, chloral hydrate is given by enema (0·5 to 1·5 gm.) or sodium luminal (0·5 to 0·1 gm.) subcutaneously.

In functional albuminuria there are albumin in the erect, no albumin in the horizontal position and negative findings in the sediment and signs of vasolability, *viz.*, frequent headache, fatiguability, pallor, cold and cyanotic moist hands, dermographism with very often a peculiar lordotic posture. General strengthening treatment assisted by arsenic is all that is necessary.

FIGHTING INDIA'S DISEASES

Details showing how India's fight against diseases is fought not merely in the field by public health workers but also in laboratories by research workers and scholars, are given in the Public Health Commissioner's latest annual Report for 1936.

A study is being made for the last four years of the organism responsible for cholera, and considerable progress has been made with respect to the identification of the true cholera germ as distinguished from various related organisms found in tanks, rivers and other water supplies all over the country. These investigations have been in the nature of a co-ordinated study in which a number of different laboratories took part and a second form of attack is being made on the problem through field enquiries.

Field studies conducted in Bengal have been directed towards the elucidation of the factors responsible for the variations which occur in the appearance of cholera, as in some places the disease appears only at intervals of some years, while in others it is an annual occurrence. Elaborate statistical studies have demarcated portions of the province as endemic and others as epidemic areas and it is hoped that in the light of more recent knowledge of the cholera germ, valuable results will be obtained as to the underlying causes of these variations.

In Madras a curious phenomenon has come to notice. In the northern districts of that province, one type of organism is responsible for the disease, whilst in the southern districts another type is found. This finding is in close conformity with the differentiation of areas made some years ago during the course of epidemiological studies of cholera in the Presidency.

The Fly Menace

Another important line of study has been that of the role of the fly in the causation of cholera. Work on this subject is still in progress in more than one province.

Researches have also been carried out on the problem of malaria. Along with other subjects these included (1) study of the life-history of malaria-carrying mosquitoes, (2) testing of the value of certain anti-malarial drugs, (3) investigation of the conditions under which transmission of the disease takes place, (4) malaria surveys, (5) malaria control experiments in different groups of villages and (6) investigations into the causation and cure of the dreaded condition known as blackwater fever, which is frequently associated with hyperendemic malarious regions.

Encouraging results have recently been obtained with a special type of treatment which the Professor

of Malariology at the All-India Institute of Hygiene at Calcutta has developed.

Cure For Plague

In the matter of plague the most suitable conditions for the production of a vaccine of maximum protecting power have been under prolonged investigation. A serum for the treatment of plague patients has also been prepared and is now under field trial. The results so far obtained have been quite hopeful, but further research is required before it can be said that a new weapon has been found for the fight against this disease.

The causes underlying the recrudescence of plague after periods of freedom from infection have been under investigation, present conditions providing a favourable opportunity for such studies in view of the comparatively low prevalence of the disease.

Field studies with cyano gas, *i.e.* hydrocyanic acid gas, have been going on for some time. In order to determine the best conditions under which this rather dangerous fumigant can be used, its destructive effect on rats in rat burrows in endemic areas has been tested and it has been found that, in order to keep down the rat population to a safe level, it is essential to carry out fumigations at least at intervals of three months.

Work done in the different laboratories has covered a very large field and has included such widely different subjects as the action of snake venoms, drug addiction, filariasis, cancer, trachoma and epidemic dropsy.

The different medical colleges in India, too, besides serving as centres for the training of students, carried out a number of useful researches on different subjects of medical and public health importance.

Medical Institutions

The number of medical colleges is 10, two each in the Presidencies of Bengal, Bombay and Madras and one each in the Punjab, Delhi, U. P. and Bihar. Whilst the college in Delhi is exclusively for women, female students are also admitted into others.

Medical schools numbered 28, of which nine were in Bengal, three in Madras, four in Bombay Presidency, two in U. P., two in the Punjab and one each in Bihar, Orissa, Burma, C. P., Assam, Central India, Sind and Bengalore.

The number of hospitals and dispensaries of all classes in British India during the year was approximately 6,900 and the average population served by each institution nearly 41,000. Whilst the average population served by each institution in urban areas reached the maximum of 20,000 in Delhi Province, the corresponding number for rural areas was as high as 124,000 in the U. P. and 104,000 in Bombay Presidency.

Rural Medical Relief

These figures indicate the urgent need for extension of rural medical relief. The subject has received considerable attention from various provincial Governments within recent years, as is evidenced by the establishment of additional rural dispensaries, the provision of subsidies for medical practitioners prepared to settle in the larger villages and the establishment of travelling dispensaries. But if medical relief is to be readily available to the average villager, by one method or another, says the Public Health Commissioner, it is necessary to obtain a wider distribution of qualified medical men throughout the country.

The number of beds available for accommodation of in-patients increased to over 76,000 for all classes of institutions, and with the increase in the available number of hospitals and dispensaries the total number of patients treated also rose to about 81 lakhs during the year. Of this increase, the greater portion was amongst women and children, an indication that the advantages of hospital treatment are becoming better understood by the female sections of the communities.

Keeping Out Diseases

Efforts were also made at the same time to keep out disease from India. To this end, public health measures are in force in major ports in British India, all of which now have qualified Health Officers. The Government of India have recently taken over the health administration of these ports, the Public Health Commissioner being the officer in direct control.

Activities at the major seaports and at the airport at Karachi are directed towards the prevention of importation and exportation of infection. The importance of such work may be judged from the fact that, in Bombay alone, 141 infected or suspected incoming ships were examined and 18,101 members of crews and 27,880 passengers were subjected to medical examination. A total of 777 outgoing vessels were also inspected and 58,970 members of the crews and 50,292 passengers were examined. All incoming and outgoing aircraft with their passengers and crews are inspected by the Karachi Air Port Health Officer.

HAJ PILGRIMS LOOKED AFTER

Another important function of port health administration is health control of pilgrim traffic to the Hedjaz. Every pilgrim ship must be thoroughly cleaned and freed from rats prior to the commencement of her first voyage and, on subsequent voyages, inspections are carried out to ensure healthy conditions. Medical inspection of the pilgrims and disinfection of all clothing and bedding suspected to have been exposed to infection are also carried out.

At the Karachi Airport, all Imperial Airways aeroplanes arriving from yellow fever infected or suspected areas in Africa were subjected to fumigation for part of the year. In addition, fumigations were carried out at Alexandria before departure for India. Seventeen members of crews and passengers from suspected areas were placed under surveillance. A general mosquito survey was made of the airport boundary and its surroundings.

INTERNATIONAL CO-OPERATION

Effective steps were also taken to co-operate with international organisations for the protection of public health. In fact, because of the increased facilities for rapid transport and the consequent removal of the time barrier in respect of the spread of disease from one country to another, international co-operation in the sphere of public health has become more and more essential.

Through the Office International d'Hygiene Publique, the Health Organization of the League of Nations and the Pan-American Sanitary Bureau, problems associated with prevention of disease were approached from the standpoint of free interchange of medical intelligence, of organised studies of epidemiological and administrative questions and of direct help, both in material and personnel, to countries where there were widespread outbreaks of epidemics. The Public Health Commissioner usually represents India at these meetings and generally speaking India has given considerable assistance to these organisations and has herself been greatly benefited by her association with them.

VOLUNTARY ASSOCIATIONS

Of the voluntary associations that took part in the fight against diseases, mention may be made of the Indian Red Cross Society, St. John Ambulance Association (Indian Council) and the St. John Ambulance Brigade Overseas, The British Empire Leprosy Relief Association, the International Health Division of the Rockefeller Foundation in India, The Countess of Dufferin's Fund and Women's Medical Service, Lady Minto's Indian Nursing Association, The Bombay Presidency Baby and Health Week Association and the Health Propaganda Board, Madras. The voluntary associations play a great part because no governmental organisation can embrace the whole range of health activities or deal with every person in a community.

Intensive health-education was a kind of activity which was common to all of them.

In addition, the Indian Red Cross Society maintained a Maternity and Child Welfare Bureau which concentrated its attention on training workers, and maintaining a central bureau of information, while the King George Thanksgiving (Anti-tuberculosis) Fund, organised a successful course of post-graduate training in tuberculosis at the All-India Institute of Hygiene and Public Health, Calcutta, which was attended by 25 medical men.

BELRA BRINGS RELIEF

The Indian Council of the British Empire Leprosy Relief Association, which was formed in 1925, consistently pursued its preventive campaign on the lines of scientific research, educational propaganda, leprosy surveys, training of medical practitioners in modern methods of diagnosis and treatment and the establishment of leprosy clinics.

Before the Indian Council was formed, few facilities existed for the treatment of the disease and the feeling among the medical profession and the public was one of apathy akin to despair. Owing largely to the activities of the Association, a gradual change in outlook has occurred. Interest has been aroused, a wider response has been made to appeals for monetary help, surveys conducted in different parts of the country have given a clearer idea of the nature and extent of the infection and steady progress has been made in our knowledge of the causes and treatment of the disease.

The Rockefeller Foundation has co-operated with the public health authorities in India in various schemes of health endeavour for the past seventeen or eighteen years. During 1936 the Foundation instituted a malaria research laboratory in Tanjore District, Madras Presidency, for the study of malaria in an irrigation area. It also gave financial help and co-operation in the development of a Health Unit at Poonamalle near Madras City. In Mysore State malaria studies were continued at three field stations and in Travancore and in the United Provinces Health Units were established. In addition, fellowships were given to six candidates for advanced public health studies in foreign countries and in India and a travel grant was awarded to a senior health officer to enable him to see some of the more recent health activities in Europe.

Dufferin Fund

A contribution received during the year from the Silver Jubilee Fund enabled the Countess of Dufferin's Fund to extend its activities in different directions, including the allotment of grants to various Dufferin Hospitals for building and equipment and to certain training schools for nurses. Further, the whole cost of the Maternity and Child Welfare Section at the All-India Institute of Hygiene and Public Health, Calcutta, including a model welfare centre for teaching purposes, was borne by the Countess of Dufferin's Fund.

The work of the Bombay Presidency Baby and Health Week Association consisted of health propaganda and a programme of research for the evolution of cheap balanced diets. These researches were financed partly by the Indian Research Fund Association and partly by the Tata Trust.

EPIDEMIC DISEASES AND THEIR PREVENTION

"Few of you had probably ever dreamt of comparing health reports in official blue-book covers with a 'crime novel', but this is what I am going to do."

This is what Colonel Russel, Public Health Commissioner with the Government of India, said in course of a broadcast talk recently on his own Report for 1936, which has recently been published.

"The average detective story, as a matter of fact, is not nearly so exciting," said Col. Russel, "as those to be found in the health reports of this country."

"We epidemiologists are constantly engaged in following up clues leading to detection of the agents causing sickness and death and of the methods these agents adopt; in some cases they may be virulent germs like those of cholera or plague, in others murderous female insects like the stegomyia or the anopheles, able to spread yellow fever and malaria. Each has its own special plan of attack.

"Every health officer can have all the thrills he wants in work of this kind. The *prevention* of murder is seldom dealt with in fiction; in the field of epidemiology, whilst the expert, unfortunately, has many murders to investigate, his main purpose is the *prevention* of these crimes against humanity. There comes the thrill and the epidemiological sections of the Public Health Commissioner's report contain the exciting stories.

Money Spent on Research is Money Well Spent

"Another chapter describes the numerous enquiries being conducted by research workers. The more important subjects under investigation include malaria, mal-nutrition, cholera, plague, leprosy, tuberculosis, maternal and child mortality, rabies and kala-azar, but there are many others. In each of these directions, highly skilled detective work is con-

stantly going on, the Government of India, through the Indian Research Fund Association, providing annual grants in order that by these means sickness, suffering and death may be reduced and prevented. Both Central and Provincial Government laboratories are engaged in similar work; for instance, millions of doses of different preventive vaccines are manufactured every year, whilst during 1936 no less than 25 million persons were vaccinated or revaccinated against smallpox alone. I can assure you that every anna of the money allotted is well spent and handsome annual dividends are earned both in the saving of thousands of lives and in the form of new knowledge, the practical application of which makes for the betterment of public health. You will appreciate the satisfaction to be derived from having a share in such work.

Immensity Of The Problem

" Before passing to other subjects, I would remind you that the Public Health Commissioner's report attempts to review the health conditions and health problems of a population, comprising nearly one-fifth of the whole human race and living in a sub-continent which includes almost every variety of climate and custom. You will realise therefore that it is no easy task to summarise events or to give any complete picture of widely varying conditions in a brief broadcast talk.

"Let me give you, in the first place, just one or two of the almost astronomical figures with which we are concerned. During 1936, nearly 10 million babies were born, there is still no evidence of a fall in the birth rate, which is such a notable feature nowadays in most Western countries. In the same period, about 6¼ million deaths were recorded. Of this total, over 1½ millions were among infants under one year of age, these mainly from preventable disease.

"The love of children is such a marked feature of Indian life that it has always been to me a matter of surprise that so few women of education and leisure have seen fit to join the voluntary organisations which for years past have done great pioneer work in the field of maternity and child welfare. Moreover, it is still almost impossible to find young women willing to take up the nursing and health visitors' professions. All this is humanitarian work which can only be done by women. Why there should be so much reluctance is for my women listeners to say!

Economics Of Preventive Medicine

"Apart from humanitarianism, let us look at this high mortality from the purely economic point of view. The loss involved in the birth and rearing of great numbers of children who die before they can make any return to the community is incalculable. Even a small step in its prevention would have an appreciable effect in increasing the wealth of the country and "a courageous attack on the problem might produce a revolution in the standards of life and prosperity."

"The report further shows that another 1½ million persons died of malaria and this disease without doubt constitutes India's major health problem. It is no doubt possible to minimise malarial infection in restricted areas, but the problem of India's 800,000 rural villages is quite a different matter. Two years ago the Government of India made a free gift to the provinces of 45,000 lbs of quinine and distribution of this drug would seem to be the most practicable method of attack under existing circumstances. As with other health problems, however, the main difficulty is one of cost, although even when quinine is distributed free, it is sometimes difficult to persuade the people to use it. Those of you who have had malaria will realise that this objection is not without foundation.

Epidemic Diseases Not Necessarily A Feature of Tropics

"Diseases like cholera, plague, smallpox, dysentery and malaria, which regularly cause large numbers of deaths, were formerly believed to be normal feature of tropical countries, a feature which could not be effectively modified. Modern hygiene has proved this to be an entirely erroneous belief.

"Experience in India and in other tropical countries has shown that these diseases can be reduced and even stamped out by the application of preventive methods. The health officer in estimating progress must, however, take the long view and a glance back over the past 31 years makes it clear to me that great improvements have been effected and

that large numbers of lives are now being saved which would have been lost if conditions had remained as they were at the end of last century.

"New problems, however, arise and the report indicates that tuberculosis has more recently become a serious menace. Careful surveys made of urban and rural populations have shown that this disease is now causing a high morbidity and mortality. It is essential to organise a wide preventive campaign if this new danger is to be met and this will shortly be planned if a sufficiently generous response is made to Her Excellency Lady Linlithgow's appeal for the King-Emperor's fund. In combating tuberculosis, large numbers of special clinics will be required, but education in hygiene, in sound methods of living and in improved diet will form an important feature of the campaign.

Population and Food Supply

"By subtracting the figure for deaths from that for births, you get a rough figure of the annual increase in population. In 1936, India's population increased by 3,600,000 and during 1937 it is probable that a further 4 millions have been added to the total. The primary necessity of the human race is adequate food and the first step towards betterment of a low standard of living is to increase and improve available food supplies. Both the Central and Provincial Governments have made, and are making, great efforts to develop more scientific agricultural practices and to provide the additional food supplies required, but the whole question of population and food supply demands the most careful study not only by politicians, economists and agricultural and health experts but by every member of the educated community. An improved standard of living is one of India's most fundamental problems.

Better Nutrition Campaign

"Closely allied with this question is that of nutrition. It may interest you to know that the Government of India, through the Indian Research Fund Association, has been carrying out nutritional researches for over 20 years past, long before the subject was discussed by the League of Nations or by other international and national committees. These researches have proved that a vast amount of malnutrition exists in this country, but considerable progress has already been made in the practice of preventive methods.

"I can mention only one example of our activities.

"During the past year a number of health officers from different provinces and States have been trained at the cost of the Central Government in modern methods of investigation and prevention of nutritional and malnutritional conditions and these officers have returned to their respective spheres qualified to put into practice the new knowledge they have acquired.

"But, of course, nothing is more difficult than to persuade people to change their dietary habits and much time and effort will be required before marked progress will be achieved. Here again, education is of primary importance and Provincial and State Public Health Departments must accept responsibility for carrying out the necessary propaganda and for extending the general nutritional campaign.

Deplorable Housing Condition

"One *new* section of the present report deals with housing. The importance of housing in relation to the health of the people was pointed out years ago both by the Royal Commission on Agriculture and, perhaps even more strongly, by the Royal Commission on Labour. In a few restricted areas, commendable efforts have been made and these have been reflected in the increased health and happiness of the workers concerned, but generally speaking, housing conditions both in towns and villages can only be described as deplorable.

"The individual Indian home is usually kept scrupulously clean, but the villager, like his prototype in other countries, sees nothing objectionable in the accumulation of refuse near his house nor is he aware of the danger arising from pollution of soil and water.

"The fundamental improvements required cannot be carried out by legislation alone. These depend mainly on the demand of a higher standard of communal hygiene from the people themselves and on the development of an educated public opinion. Fortunately, both are now gradually being realised, but side by side with the educational activities now in

force, Provincial Governments and Local and Municipal bodies will have to take administrative action and encourage interest and activity.

"It is commonly stated that 'health is better than wealth', but I am afraid few give this old truism more than lip service. Is it too much to hope that what has been said will stimulate some, at least, of my listeners to take a greater interest in the health and welfare of their own country and their own people?"

HEALTH IN INDIA'S JAILS

That the health of the general jail population in India can be described as satisfactory during the year, and that the medical and health administration of Indian jails has continued at a satisfactory level of efficiency, is the opinion expressed by the Public Health Commissioner in his latest Report on the subject for the year 1936.

The hospital admission rate for all diseases showed a fall, compared with 1935 and also with the quinquennial average. The general mortality rate (11 per mille) was the same as last year, but is one per mille below the rate for the previous quinquennium, and compares favourably with the rate for the whole of India for the year, which was 23 per mille.

The fall in the incidence of malaria has been maintained, and this decrease is particularly noticeable in the provinces of Bengal, Sind, Bombay and Assam. There has also been a fall in the admission rates for "dysentery and diarrhœa."

Decline in Jail Population

The average daily jail population during the year of the district and central jails of India was nearly 143,000, or over 700 less than in 1935. Decreases occurred in N. W. F. P., the Punjab, U. P., Orissa and Sind, whilst the provinces of Behar, Bengal, C. P., Bombay, Madras, Assam and Burma recorded increases as compared with the previous year.

In the provinces of U. P., Bihar, Orissa, Central Provinces, Bombay, Sind, Madras and Burma, the daily average population was below the authorised accommodation. In N. W. F. P., Punjab, Bengal and Assam there was some over-crowding.

The constantly sick rate per mille was the highest in Bengal, namely 38; for a majority of the provinces the rate ranges between 21 and 24, but in Burma and C. P. the rates are as low as 11 and 9 respectively.

Hospital Admissions

The hospital admission rate dropped to 483 per mille during the year, the figures for the last year and for the quinquennium being 497 and 564 respectively. Bengal returned the highest rate, namely, 937 per mille, followed by 663 per mille in Sind and 574 per mille in the Punjab, whilst at the lower end of the scale are Madras 252 per mille, C. P. 232 per mille and Burma 142 per mille.

Malaria, as usual, was responsible for the largest amount of sickness, the hospital admission rate per mille being 131.

The lowest death rate during the year was 8 per mille recorded in U. P. and the highest 19 per mille in the C. P.

Prisoners Put on Weight

The following is a tabular statement giving the percentages of prisoners showing gain or loss in weight on discharge, in the different provinces:

Provinces	*Gained Weight*	*Lost Weight*
Madras	... 64	8
Orissa	... 60	9
Punjab	... 41	11
N. W. F. P.	... 53	11
U. P.	... 57	11
C. P.	... 62	11
Bihar	... 57	12
Bengal	... 49	12
Assam	... 59	13
Burma	... 60	15
Bombay	... 54	18
Sind	... 47	30

The weight with regard to the balance was stationary.

Condition in the Andamans

As for the Andamans, the convict population of which falls under two groups (1) those confined in cellular jails and associated barracks and (2) talabdars living in barracks and married quarters and self-supporting convicts, the hospital admission rate, which is a ratio per 1,000 of the total number of admissions to the daily average population of the jail and the mortality rate for the two groups combined were 549 per mille and 10 per mille as compared with 651 and 10 in 1935. When these rates are separately shown for the two groups, the admission and mortality rates become 871 per mille and nil for the first group and 504 and 12 per mille for the second group. As a similar classification into two groups was not carried out last year, comparative figures cannot be given for the two years. Taking the groups together, however, there is no indication of deterioration in the health of the Andamans jail population; on the other hand, the statistics for the year show that the health of the population as a whole has improved.

That there was no overcrowding in the Andamans cellular jail and associated barracks is evident from the fact that the total accommodation available during the year was for 1,062, including provision for 682 in the cellular jail and 380 in associated barracks, whilst the daily average strength was 815.

The daily average sick numbered 25 per mille of the average strength. The total number of hospital admissions during the year was 710, giving an admission rate of 871 per mille of average strength. Fifty-five admissions were due to malaria, 52 to influenza, 30 to sandfly fever, 28 to respiratory diseases, 13 to diarrhœa, 4 to pyrexia of uncertain origin, 4 to dysentery and 4 to pneumonia and 1 each to tuberculosis of the lungs, anæmia and enteric fever. The general health of the inmates of the cellular jail was on the whole satisfactory, and there were no admissions due to cholera, smallpox or plague.

In the settlement for talabdars and self-supporting convicts the barracks and cells allowed 50 superficial feet per prisoner and had accommodation for a total of 4,635, but the number totalled only 2,427.

The total number of admissions to hospitals was 2,909 or 504 per mille against 2,950 during 1935 and 3,069 the average for the last four years. Of this total 668 admissions were for malaria, 162 for dysentery, 195 for respiratory diseases, excluding tubercle of the lungs and pneumonia, 67 for Weil's disease, 59 for diarrhœa, 38 for anæmia and debility, 20 for pneumonia, 17 for tuberculosis of the lungs, 7 for influenza and five for enteric fever. Cholera, smallpox and plague were absent.

Malaria Goes Down in Andamans

The total number of deaths in and out of hospital was 67 or 12 per mille of the average strength. The increase in the number of deaths during the year was partly due to the inclusion of deaths amongst prisoners repatriated on medical grounds to India, if these died within three months of repatriation. It was also partly due to a mild epidemic of Weil's disease, which was responsible for about 24 per cent. of the total mortality. Deaths from different causes included pneumonia 11, tuberculosis of the lungs 7, dysentery 5, malaria and anæmia 3 each, respiratory diseases 2 and enteric fever 1.

Total admissions and deaths from malaria for the past five years are given below:—

Year	*Total admissions for malaria*	*Total deaths in hospitals*
1932	... 1,803	38
1933	... 1,621	16
1934	... 1,497	9
1935	... 1,353	7
1936	... 723	3

Energetic measures against this disease, including prophylactic and post-hospital issue of quinine, appear to have been responsible for the decrease in the admission and mortality rates.

ASSOCIATION NOTES

Minutes or proceedings of Branches and Affiliated Societies intended for publication should be sent to the General Secretary of the I. M. A., Samavaya Mansions, Calcutta—EDITOR.

JALPAIGURI BRANCH

The following resolution was passed in a meeting of the Branch held on 31-7-38:—

Letter dated 5th July, 1938 from the Hony. General Secretary was read in the meeting and discussed. As regards the communication dated 10th June, 1938, of the Tinnevelly District Medical Association, circulated by the Honorary General Secretary, Indian Medical Association for the opinion of this Branch:

It was resolved that the Jalpaiguri Branch of the Indian Medical Association fully endorsed the opinion of the Tinnevelly District Medical Association regarding the amalgamation of the All-India Medical Licentiates' Association with the Indian Medical Association and considers that such an action will increase the strength and solidarity of the medical profession in India.

* * *

Proceedings of a meeting held on 31-8-38.

Members present:—Drs. S. C. Sen Gupta, T. P. Sanyal, S. C. Bhowmick, A. S. Guha Neogi, S. N. Das Gupta, P. Saha, S. Bose, B. Bhowmick, J. Ghosh, N. Sen Gupta and S. Chatterjee.

Proceedings of the last meeting were read and confirmed.

The final nominations of President and Vice-Presidents of the Indian Medical Association were considered and be it resolved that the following persons be selected for the following posts for the year 1938-39: Dr B. C. Roy (Calcutta) President, and Drs. Panchanan Chatterjee, A. D. Mukharji and Capt. P. B. Mukherjee of Calcutta as Vice-Presidents.

The proceedings of the Bengal Provincial Council meeting held on 29th July, 1938 along with a copy of the resolutions passed at a special General Meeting of the Bengal Provincial Branch of the Indian Medical Association held on 23rd July, 1938 forwarded to this Branch on 8-8-38 were read and discussed and noted.

The circular dated 17th August, 1938 issued by the Organising Secretary, XV All-India Medical Conference to be held in Meerut during the Christmas week read and noted.

The final selection of President and Vice-Presidents of the Bengal Provincial Branch of the Indian Medical Association were considered and be it resolved that Dr. K. S. Ray (Calcutta), be selected as President and Drs. A. D. Mukharji, C. C. Basu and Subodh Datta be selected as Vice-Presidents of the Bengal Provincial Branch of the Indian Medical Association for the year 1938-39. The selection of the two Secretaries and two Assistant Secretaries for the Bengal Provincial Branch was also considered and it was resolved that Dr. K. K. Sen Gupta (Calcutta) and Dr. Basanta K. Ghosh (Barrackpore), be selected as Secretaries and Dr. P. K. Guha (Calcutta) and Dr. Probodh Chandra Roy (Calcutta), be selected as Assistant Secretaries of the Bengal Provincial Branch of the Indian Medical Association for the year 1938-39.

The proceedings of the Bengal Provincial Council of the Indian Medical Association held on 17-8-38 and forwarded to this Branch by the Jt. Hony. Secretary, Bengal Provincial Branch on 24-8-38 were read in the meeting and noted and minute No. 6 of the proceedings was supported by all.

The letter dated 24th August from the Hony. General Secretary of the I. M. A. regarding the low scale of fees paid by the Insurance Companies for examination of life insurance cases and the copy of resolutions passed at a joint meeting of the members of Faridpur and Rajbari Branches of the Indian Medical Association in connection with this on 18-7-38, forwarded to this branch, were considered. Be it resolved that this meeting of the Jalpaiguri Branch of the Indian Medical Association, while supporting the resolution of the joint meeting of the Faridpur and Rajbari Branches, considers that even if all the Branches of the Indian Medical Association pass such resolutions and the members thereof strict-

ly follow it in action, there can possibly be no deadlock in the medical examination of life insurance cases as other medical men who are not members of the Indian Medical Association may take advantage of the situation and go on with the medical examination of life insurance cases. Having in view of such a possible sequence, this branch of the Indian Medical Association requests the Central Council of the Indian Medical Association to move the Central Legislature to pass such a bill as will compel the life insurance companies to adopt a uniform standard of medical fees for examination of life insurance cases, Rs. 8/- being the minimum amount for each case of Rs. 1,000/-.

Resolved that to facilitate the establishment of a medical club in the town, Drs. S. N. Das Gupta, Provash Chandra Saha and Jyotish Chandra Ghosh be empowered to make all preliminary arrangements with regard to the matter and that the Jt. Hony. Secretaries of this branch be requested to help them whenever required. The subscription for the membership of this club will not exceed Re. 1/- per head in each month.

The resolution from Dr. S. N. Das Gupta dated 19-2-38 was reconsidered and discussed in this meeting and be it resolved that a sub-committee consisting of Drs. S. C. Bhowmick, A. K. Bhowmick, A. D. Guha, Neogi and S. N. Das Gupta be formed to consider ways and means to give effect to the resolution and that the report of this sub-committe be submitted to the next ordinary meeting of this branch which will be held sometime in October.

A statement of account of the money spent in connection with a tea party arranged from this branch in honour of Dr. H. Ghosh, M.B. M.S.P.E., on 7-8-38, was placed before the meeting and passed as correct unanimously.

* * *

A joint meeting of the All-India Medical Licentiates Association and Indian Medical Association, Jalpaiguri Branch, was held in the house of Dr. S. C. Sen Gupta at 7-30 p.m. on 20-9-38., to observe the "Anti-Indian Medical Council Act Day".

Members present:—Drs. S. C. Sen Gupta, T. P. Sanyal, A. K. Nandy, A. D. Guha, Neogi, A. K. Bhowmick, S. C. Bhowmick, S. N. Das Gupta, P. C. Saha, J. C. Ghosh, S. Chakravarty, N. Ghosh, R. Datta and P. Haldar.

The following resolutions were passed unanimously:—

"Resolved that this joint meeting of the All-India Medical Licentiates Association and Indian Medical Association, Jalpaiguri Branch, lays its emphatic protest against the notorious Indian Medical Council Act of 1933 inasmuch as this act has debarred a large section of qualified medical men of India (namely the licentiates group) to be included in the purview of this act, it has constituted a council where the official elements exceed the elected members, it has adopted an anomalous policy in reciprocity of accepting the foreign medical qualifications as if only to conciliate the British Medical Council without any stamina and strength of its own.

This meeting, therefore, requests the Provincial Branches of the All-India Medical Licentiates Association and Indian Medical Association to influence the Bengal Government and members of the Bengal Legislatures to introduce a bill amending this act wherever it is defective and desirable and then refer it to the Government of India with pressure for acceptance.

S. C. Bhowmik,
Jt. Hony. Secretary.

SOUTH CALCUTTA BRANCH

The adjourned meeting of the branch was held at 8 p.m. on 11-9-38 at 104 Asutosh Mukherjee Road with Dr. K. S. Ray in the chair.

Members present:—Drs. S. N. Gupta, Sachi Kanta Sen, N. N. Mukherjee, K. S. Ray, J. P. Chowdhury, R. M. Bakshi, K. M. Pal, N. N. Das, Vice-President, P. Chakrabarty, Anil Chakrabarty (by invitation), S. N. Das (by invitation), Anil K. Sen (by invitation), Simadri Chatterjee, S. N. Roy and Capt. P. B. Mukherjee (by invitation).

Proceedings of the last meeting were confirmed. At this stage the Vice-President, Dr. N. N. Das came and took the chair.

This meeting expresses its condolence at the sad and untimely death of Dr. B. B. Bose, who was a member of this Association.

Resolved that a copy of this resolution be forwarded to the members of the bereaved family. (The resolution was passed with members all standing).

Dr. D'silva was nominated for the presidentship of the I. M. A. for the next year.

The following were nominated for the Vice-Presidentship:

1. Dr. Charu Chandra Bose.
2. Col. Shastri.
3. Dr. Viswanath.

Read the resolution of the Faridpur Branch of the I. M. A. (dated 21-6-38) regarding the scale of medical fees for Life Insurance Companies.

The meeting wholeheartedly supports the resolution and a copy of the same resolution be forwarded to the General Secretary.

The Secretary reported that two sub-committees were constituted—one for framing the rules of the branch and the other for the clinical meetings. The Secretary reported that draft rules have been prepared by the Assistant Secretary.

It is resolved that the sub-committee be requested to expedite the matter and to place it before the next meeting.

The clinical sub-committee be requested to convene clinical meetings.

Read a letter from the General Secretary, I. M. A., dated 30th August, 1938, regarding amendments of the I. M. A. Act with a view to bring the Licentiates within the purview of the Act and to rectify some other defects.

Resolved that the Hon'ble Minister-in-charge of Local Self-Government and Public Health, be requested to move the Government of India to introduce a bill for amending the I. M. A. Act of 1933 on the lines suggested by the Honorary Secretary in his letter dated 30-8-38.

Resolved further that the members of the Provincial Assembly, Bengal be requested to move a resolution on the lines suggested in the letter of the Honorary General Secretary, I. M. A., dated 30-8-38.

Copy of the resolution be sent to the leaders of the different groups in the Assembly in Bengal and also to the Hon'ble Minister-in-charge of Local Self-Government and Public Health.

At this stage Dr. S. N. Roy, the President, came and took the chair.

The consideration of items 7 and 8 on the agenda be put off till the next meeting.

BARISAL MEDICAL UNION

At a meeting of the Executive Committe held on 13-9-38 under the presidency of Dr. J. N. Sen, L.M.S., the President of the union, the following resolution was carried unanimously:—

That the Barisal Medical Union contribute Rupees twenty to the Barisal District Relief Committee for the relief of the flood-stricken people of the district, out of the funds of the union.

BARUIPUR-RAJPUR BRANCH

Proceedings of the 12th meeting of the Baruipur-Rajpur Branch held on 10-9-38 at 4 p.m. at South Garia at Dr. Rati Pati Banerjee's house.

Members present:—Capt. Ardha Chandra Banerjee, Drs. Pulindra Kumar Ray Chowdhury, Biprendra Kumar Mukherjee, Hara Prosad Bhattacharyya, Shibdas Bhattacharjee, Sachindra Kumar Sircar, Umakanta Mitra, Radha Raman Sinha and Rati Pati Banerjee.

Dr. Pulindra Kumar Ray Chowdhury took the chair.

Election of office-bearers for 1938-39:

President—Dr. Pulindra Kumar Ray Chowdhury.
Vice-President—Dr. Radha Raman Sinha.
Secretary—Capt. A. C. Banerjee.
Asstt. Secretaries—Dr. R. P. Banerjee and Dr. H. P. Bhattacharya.

Jt. Hony. Treasurers—Dr. U. K. Mitra and Dr. S. Bhattacherjee.

Nomination of the branch for the presidentship and the vice-presidentship of the I. M. A.

President—Sir U. N. Brahmachari, K.T.

Vice-Presidents—Dr. N. R. Sen Gupta, Col. K. K. Chatterjee, Dr. Panchanan Chatterjee.

Consideration of the resolution passed by the Tinnevelly District Medical Association, Palamcottah, regarding the desirability of amalgamating the I. M. A. and the All-India Medical Licentiates Association:

Resolved unanimously that these two associations be merged into one with their funds and journals and that the Indian Medical Association be urged to approach the All-India Medical Licentiates Association to discuss the matter and bring about the amalgamation at an early date.

The meeting dissolved with a vote of thanks to the chair and the host.

A. C. BANNERJEE, *Secretary.*

P. K. ROY CHOWDHURY, *President.*

KHULNA BRANCH

Proceedings of a meeting of the Khulna Branch of the Indian Medical Association held on 18-9-38:

Dr. Nagendra Nath Bhattacharyya, M.B. (senior) took the chair.

This branch recommended Dr. Subodh Datta (Calcutta) as President and Dr. Panchanan Chatterjee, Dr. A. D. Mukherji and Capt. P. Ganguli all of Calcutta as Vice-Presidents of the Bengal Provincial Branch on 10-8-38 by its resolution No. 2.

We finally vote for them now for the respective offices mentioned above.

This branch selects the following gentlemen for the respective offices mentioned against their names for the Provincial Branch for the next year:—

Secretaries:—(1) Dr. K. K. Sen Gupta (Calcutta), (2) Dr. Bolindranath Ghosh (Calcutta).

Assistant Secretaries:—(1) Dr. P. K. Guha (Calcutta), (2) Dr. Probodh Ch. Roy (Calcutta).

Treasurer:—Dr. Jogesh Chandra Banerjea (Calcutta).

Resolved that this Association will arrange medical relief in the areas affected by flood and famine within this district as far as our small resources will permit.

Resolved further that necessary negotiations with the Provincial Council and local bodies may be started by the Secretary.

KALI PADA POI,
Hony. Secretary.

NASIK MEDICAL ASSOCIATION

At a well attended meeting of the Nasik medical profession, held at Capt. Gupte's dispensary to observe protest day for the Indian Medical Council Act, 1933, the following resolutions were unanimously adopted:

This meeting of the Nasik medical profession held under the joint auspices of the local branches of the All-India Medical Licentiates' Association and the Indian Medical Association emphatically condemns the exclusion of the medical licentiates from the purview of the Indian Medical Council Act 1933, and also against certain provisions in the said Act which restricted the representation of the non-official medical profession in the Medical Council and which perpetuated the unwanted dominance of the General Medical Council of Great Britain over our affairs and requests the Government of India to amend the said Act suitably in consonance to the demands made by the two premier abovementioned organisations of the country.

This meeting considers that in order to achieve unifomity of medical education standard, the medical schools should be abolished and colleges opened in their places. Provincial Government representatives should be requested to give effect to this resolution.

H. S. JOSHI,
Secretary.

KARACHI MEDICAL ASSOCIATION

A joint meeting of the Karachi Medical Association, and All-India Medical Licentiates Association, was held to observe the All-India Medical Council Act Day, on 20th September, 1938, when the following resolution was passed:

That the Karachi Medical Association and the All-India Medical Licentiates Association condemn the action of the Government of India in passing the Indian Medical Council Act which is against the medical profession of India and is of opinion that either it should be repealed or amended, so as to include all qualified medical persons in India.

R. A. AMESUR,
Honorary Secretary.

JHANSI MEDICAL ASSOCIATION

At a meeting of the Jhansi Branch of the Indian Medical Association jointly with the Jhansi Branch of the All-India Licentiates Medical Association the following resolution was unanimously adopted:

The members of the medical profession in Jhansi record their emphatic protest against the defective constitution of the Indian Medical Council, which as at present constituted is subservient to the interests of the General Medical Council of United Kingdom.

This meeting requests the Government of India and the members of the Indian Legislative Assembly to amend the act in the following respects so as to conform with the name, dignity and the functions of the council:

(a) The maintenance of an All-India Register of all qualified medical practitioners including the licentiates.

(b) The securing of a uniform minimum standard of qualification in the medical schools and colleges of India as is prevalent in other countries and the consequential abolition of all differences between the graduates and the licentiates.

(c) The recognition of non-Indian diplomas and degrees on principles of self-respect and reciprocity only.

(d) A large number of elected members on the Indian Medical Council.

This meeting further resolves to request the local government and the local legislature to bring pressure upon the Government of India in this in every way open and possible to the local government."

* * *

At the annual meeting of this Branch held on October 8, 1938, the following office-bearers were elected unanimously for 1938-39:

President—Capt. J. F. DeSouza, L.M.S.

Vice-Presidents—Drs. Sarju Prasad Dube, L.M.P., R. K. Mathur, M.B., B.S., D.P.H.

Secretary—Capt. H. N. Shivapuri, M.B., B.S., I.M.S. (Retired).

Joint-Secretary—Dr. F. L. Jain, M.S.M.F., L.O.

Treasurer—Dr. A. Chaudhari, M.B.

Members of the Executive Committee—Drs. V. G. Dube, L.C.P.S., M. L. Mehra, M.B., B.S. and Y. B. Mate, L.C.P.S.

Auditor (outside the Executive Committee)—Dr. C. Bhargava, L.S.M.F.

Representative on Provincial Council—Capt. H. N. Shivapuri, M.B., B.S., I.M.S. (Retd.).

Representative on the Central Council—Capt. H. N. Shivapuri M.B., B.S., I.M.S. (Retd.).

H. N. SHIVAPURI,
Honorary Secretary.

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION

The monthly meeting of the Tinnevelly District Medical Association was held at the Subramanya Karayalar Public Library, Palamcottah, on Saturday, the 24th of September, 1938. Members numbering 58, including two women doctors were present on the occasion. Sri. K. P. Yegneswara Sharma, M.A., M.L.A. was present at the meeting on special invitation.

After tea party and sweet music the meeting began under the presidentship of Lieut.-Col. P. S Shastry, I.M.S.

The Secretary and the Treasurer read out the minutes of President's function of the Association held on the 21st of August, 1938, and these were passed. He also read the minutes of the special meeting held to meet Lieut.-Col. H. E. Short, M.B., I.M.S., the Acting Surgeon-General with the Government of Madras, and these were passed.

The Secretary read the letter received from the Honorary Secretary, Indian Medical Association, Calcutta, regarding the inclusion of the licentiates within the purview of the Indian Medical Council Act, maintenance of the Register, etc. Sri K. P. Yagneswara Sarma, M.A., M.L.A., promised to bring the subject before the next Legislative Assembly meeting.

The Secretary read the letter received from the Honorary Secretary, Indian Medical Association,

Calcutta, regarding fees for examining candidates for Life Insurance Companies. After discussion by the members the following resolution of Dr. L. Mahadevan, M.B.B.S., D.O.M.S., was passed unanimously, having been recorded:—

"It is hereby solemnly resolved that no member of the Tinnevelly Branch of the Indian Medical Association shall examine any case for Life Insurance unless he is paid a fee of Rs. 10/- as minimum, and Rs. 16/-, if the blood pressure is to be taken, (exclusive of any expenses of travel if it is outside his consulting room) for the medical examination, whatever the amount of Insurance may be."

It was also resolved to enlist the co-operation of the neighbouring District Medical Association in this very important matter, and then to finally decide it at another meeting.

The following resolutions of the Managing Committee were discussed:

1. Amending Rule No. 19 as follows:

To have the power to alter the constitution at any one of its meetings after previous notice has been given where not less than one half of the number of members on the roll are present and three-fourths of the number present are in favour of the proposed change in the constitution.

2. New Rules:

Members whose subscription is in arrears for six months shall cease to be members, but they continue to be liable to pay the arrears.

3. Members who have lost their membership under the above bye-law shall not be re-admitted unless they pay all the arrears due from them.

4. A non-residential membership shall be instituted as follows:

(1) It is resolved that the Association may institute a non-residential membership for the benefit of those members of our Association who get transferred or who have to move out of our district in the course of the Journal year (1st October to 30th September following) after having paid their subscription for the year.

(2) This non-residential membership applies only to such members as are residing and working in a district which has no Branch of the Indian Medical Association.

(3) It is proposed that the annual subscription for the non-residential members should be Rupee one for the membership plus a Journal subscription of Rupees three per annum for the Journal. But since he has already paid Rupee one towards the Journal he should pay only Rupees two for it for the current year.

(4) Before he leaves the district he should pay all the subscription and other dues due to the Association; and when he applies for non-residential membership he should also pay in advance the subscription of Rupees three for the current year.

(5) For the next year onwards he should pay Rupees four in advance. If it is not paid in advance his name shall be removed from the list.

(6) His application should be accepted by the Managing Committe and he should be enrolled as a non-residential member, before he gets the benefit of it, and the Secretary of the Indian Medical Association, Calcutta, should then be informed to continue to send the Journal to such a member to his new address.

5. The "Association Year" shall be from the 1st of October to 30th of September following to come into line with the Indian Medical Association.

It was also suggested that the next annual general meeting be arranged in the month of November or December next.

Dr. P. S. Srinivasan, read out the following cases which were operated and treated at the Government Headquarters Hospital, Palamcottah.

1. A case of cretinism.

2. A case of fracture pelvis.

3. A case of suppurating antrum of Highmore (right side).

4. A case of compound fracture of lower jaw as a result of an accidental fall.

5. A case of abscess in inguinal canal.

6. A case of tuberculosis of lungs attended with inguinal hernia.

Dr. K. S. Subramanyam, L.M. & S., Assistant District Medical Officer, Tinnevelly, read an interesting paper on "Advances in the Therapeutics of Antimony".

The cases were exhibited to the members by Dr. Srinivasan, while the skiagrams related to them were demonstrated by Dr. Kantayya, B.A., M.B., B.S., each case was fully discussed by the members.

Thereafter Colonel Shastry, I.M.S., summed up the salient and important features of all the cases and their differential diagnosis in detail. He offered his cordial thanks to Sri K. P. Yegneswara Sarma, M.A., M.L.A., for his readiness in accepting the invitation and for his promise of moving the Legislative Assembly regarding the Indian Medical Council Act. He thanked Sri C. V. Gopalan, B.A., B.L., for placing the Library Hall at the disposal of the Association for holding the meeting.

Thereafter an excellent dinner party brought the happy gathering to a close at 11 p.m.

HEALTH EXIBITION

In the morning a Health Exhibition was arranged at the Government Training School, Tirunelveli Town, for the benefit of the teachers and school children of the Tirunelveli Municipality. The exhibits consisted of poster relating to cholera, tuberculosis, malaria, small-pox, fly-danger, etc.

K. RAMA AYYAR, M.B., B.S. (Andhra),
Secretary & Treasurer.

ROORKEE BRANCH

Proceedings of the first meeting of Roorkee Branch.

The first meeting of the Branch was held at the residence of Dr. B. D. Garg, M.B., B.S. on 21st June, 1938, at 5-30 p.m. under the presidentship of Capt. J. Revans, I.M.S., Civil Surgeon, Roorkee.

After a short opening speech by Dr. R. C. Srivastava, B.SC., M.B., B.S. explaining the aims and objects of the medical association and its advantages the following office-bearers were elected:—

President—Lieut.-Col. G. B. Hanna, I.M.S., Civil Surgeon, Roorkee.

Vice-President—Major R. Keelan.

Secretary—Dr R. C. Srivastava.

Treasurer—Dr. K. N. H. Rizvi.

Representative to Provincial Council—Dr. B. D. Garg.

Representative to Central Council—Dr. J. G. Pereira.

Later a paper was read by Dr. K. N. H. Rizvi on quackery. He dealt the subject very exhaustively and amongst the causes especially mentioned by him which were responsible for prevalence of quackery were the ignorance of the people and the absence of any laws against the quacks. All the members took part in the discussion. In the end, the president summed up all the causes and the possible ways of its prevention and the following resolutions were passed unanimously:

In view of the fact that quackery is so common in India, it is resolved that the provincial medical association be requested to approach the proper authorities for making a law that the unqualified and unregistered practitioners should not be allowed to practise in the scientific system of medicine (allopathy).

Resolved that Dr. Rizvi, and Dr. Garg be thanked, the former for his excellent and interesting paper on quackery and the latter for having entertained us at his place.

On the suggestion of the president it was decided to hold the next meeing in the Indian Military Hospital.

With a vote of thanks to the chair the meeting came to a close and was followed by an At Home which was arranged by Dr. Garg and was enjoyed by all the members.

* * *

Proceedings of the second meeting of the Roorkee Branch.

The second meeting of Roorkee Branch, I. M. A., was held in the Indian Military Hospital, Roorkee, under the presidentship of Capt. J. Revans, I.M.S., on Monday, the 25th July, 1938, at 5-30 p.m. A letter of apology from Lt.-Col. G. B. Hanna, I.M.S., the President-elect of the meeting, was received expressing his inability to attend the meeting.

The minutes of the last meeting were read by the Secretary which were duly confirmed. Several extracts from the daily papers were read in which definite instances of deaths due to administration of poisonous drugs by the quacks was brought to the notice of members and the necessity of a definite

legislation was urged. The following names were proposed and passed for nomination to different offices:

1. Dr. G. DeSilva of Jubbulpore, for Presidentship of Central Association.

2. Rai Sahib Dr. Suraj Mal Sarin, Dr. P. T. Patel, and Lt.-Col. D. P. Bhargava for Vice-Presidentships of Central Association.

Next clinical cases were demonstrated to the members. Three cases of cold abscess, adenitis neck, and catarrhal jaundice were demonstrated from the Indian Military Hospital by Capt. Revans, and one case of nervous disease was demonstrated by Dr. B. D. Garg. All the members took part in the discussion.

With a vote of thanks to the chair the meeting came to a close and was followed by an At Home which was arranged by the President.

P. C. SRIVASTAVA, B.SC., M.B., B.S.
Hony. Secretary.

GONDA BRANCH

The following resolutions were passed:

That this Meeting of the I. M. A. Gonda Branch requests the U. P. Government to influence the Central Government to amend the Indian Medical Council Act in such a way

(i) As to include the licentiates within the purview of the Medical Council.
(ii) To increase the elected element in the Indian Medical Council.
(iii) To maintain an All-India Register.

* * *

Resolved that the Gonda Branch of the Indian Medical Association heartily approves of the resolution of the Faridpur Branch in connection with minimum fees of Rs. 8/- to be charged for Insurance cases.

Further resolved that the Hony. Secretary be authorised to circulate to the members of the I. M. A. Gonda Branch for information of resolutions concerning the minimum fees to be charged for Insurance cases.

S. B. SINHA, M.B., B.S.
Hony. Secretary.

MEERUT MEDICAL ASSOCIATION

ANNUAL REPORT FOR 1937-38.

The year under review has been a fairly busy one as regards the monthly activities of the Medical Association and secondly due to the extra amount of work which the Meerut Medical Association gladly took upon its shoulders by inviting the All-India Medical Conference to Meerut. As the time for it is fast approaching the work has already been started and the results of which you are to await, watch and see yourself.

I frankly admit when I took up the office I was quite a raw hand and novice to such important office and hence must have made lots of mistakes due to my inexperience according to the popular saying that "experience teaches slowly but at the cost of mistakes", for which I beg pardon from the members. If at all anything good is done (which I doubt very much), it has been due to the co-operation of the members, my colleagues and elders.

Membership:—Our membership has gone down a little. We started with 56 members on the roll and we are 48 at present. Though the figures surely show shortage, but the facts are not disappointing. Since 5 private practitioners left the station, names of 3 members were removed for nonpayment of a large amount of arrears standing since last year and one member we lost as Ghaziabad became a separate Branch. On the whole 16 members left us and 7 new members joined us.

Meetings:—We have been lucky as regards the meetings of the Association. I am glad to say I had not to hanker after speakers. Whomsoever I approached he was most willing to help me with a promise of lecture. I frankly acknowledge that some of my elders to whom I went with a feeling of awe and disappointment not only gave a promise to speak, but an additional promise of tempting tea and dainty dishes to the members. This time I had drifted a little off the traditional path, in arranging social entertainments like Houz Party and Cinema show, thinking that sometimes the members feel impatient with the patients and the talk about them and disease. I do not know if the members appreciated this change or not. But I think it is good to have little vacation after vocation.

We held 11 Executive Committee and 10 general meetings including 2 social entertainment meetings,

1 clinical and a few sub committee meetings, as compared to 11 Executive, 7 general and no clinical meetings of last year.

The following papers were read on different occasions:

1. Notification of diseases by Dr. P. D. Gupta.
2. Trachoma and its treatment by Dr. O. Prosad.
3. Diabetes and its treatment by Dr. R. S. Gupta.
4. Oriental sore by Dr. P. L. Gupta.
5. Hæmoptysis by Dr. J. L. Caroli.
6. Account of his medical experiences of his tour in Europe and Cairo by Dr. S. K. Mukerji, F.R.C.S., D.O.M.S., D.O., Professor of Ophthalmology, Calcutta Medical College, Calcutta.
7. Glaucoma by Dr. Lakshmi Shanker, Z.O. (Vienna).
8. Clinical case histories and treatment by Dr. G. S. Bhargava.

As regards attendance at the meetings, I have to make an appeal to members to take more interest and to attend these in large numbers to encourage the speakers and the office-bearers. I hope you would realise how humiliated a speaker feels when he comes to speak on a subject prepared after lot of labour and excercising his energy finds an audience the number of which can easily be counted on fingers' ends.

Journals:—The following journals were subscribed for the year:—

1. Indian Medical Gazette.
2. Calcutta Medical Journal.
3. Practitioner.
4. Clinical Journal.
5. British Medical Journal.
6. Journal of Laboratory and Clinical Medicine.
7. Surgical Clinics of North America.
8. Medical Clinics of North America.
9. British Journal of Ophthalmology.
10. Medical Annual.

The circulation of Journals has been fairly satisfactory. In this connection I have got to thank my enthusiastic colleague Dr. S. B. Vyas who has kept a keen watch on circulation.

Library:—It gives me great pleasure to inform you that several improvements have been made in the Library. Books worth Rs. 369/- according to list price have been replaced by the latest editions and the old ones removed. Some of them were very old. Book ends and the wooden blocks have been provided, the former to keep the books in place and the latter to keep in place of books issued. We had in mind to puchase new books also, but since we had taken to replacing of older editions with latest ones, we had to postpone it for the present due to shortage of time. A new clock has been purchased which was long since wanting and I wonder why the Library had been without it since its birth and which now warns us that 'time and tide wait for none' and hence make full use of the time. But I am sorry to say that on one side when we have been trying to improve the Library, the members have begun becoming slack in the study of books therefrom as is evident by the issue receipts of books being only 153 as compared with 205 of last year. So may I be permitted to make a request to the members to try to go deep in search of treasures of knowledge in the books about this vast medical science and pick up the pearls which the famous authors have dropped for us all and make them into garlands for the success of this noble profession. Because I believe in the fact that 'a first-hand knowledge never becomes second-hand when used'. All of us live to learn and must learn to live.

In this connection I have got to thank my colleague Dr. Vyas who has put up enormous amount of work and due to whose untiring zeal we find the improvements in the Library.

Finances:—We have just balanced our budget. I cannot tell you better than the balance-sheet that is before you all and which speaks for itself. Dear brethren, if you give a moment's thought to this, you would realise that brick by brick citadels can be raised but if brick after brick is removed the citadel even will definitely drop down to doomed destruction. Similarly our Association, which you feel proud of, is built on your sweet wishes and your charity, if any of these is withheld you lead it to decay. I am pained to say that arrears have accumulated a lot inspite of all the efforts we possibly could at realisation. We had to write off about Rs. 179-12 and even then the arrears are Rs. 348-12.. Reminders were sent, but reminders too required reminders and those too remained unminded for. I realise partly it may have been due to hard times, but partly due to carelessness too. I think 2 rupees, if paid every month

cause no difficulty, but when it accumulates then actually the difficulty arises. So I would make an appeal to the members to pay it every month and to those who are in arrears to pay them in instalments paying a little extra every month. I am sure this will facilitate matters if followed.

I shall be failing in my duty if I do not thank my colleague Dr. R. C. Chaurasia who has so nicely kept the records of finances with accuracy.

Miscellaneous:—We have made few more improvements in general:

1. Card system has been started for the convenience of members who are very busy or who do not maintain weekly diaries.

2. We had started sending peon to Hapur for circulation of Journals and delivery of books. We had in mind to do the same for other outstations too, but the number of members being less in other places we could not do so.

3. New amended rules have been printed for the information of members in accordance with the rules of parent body I. M. A.

Recently we had started to be more attentive towards punctuality in the meetings. We practised it just as a trial in the last 3 or 4 meetings and it proved fairly successful. We started the meeting within 15 minutes of the announced time. I think if this is followed this saves lot of time that is uselessly lost in waiting, otherwise the members form a habit of coming late and make the punctual comers suffer. In this connection I would like to point out 2 names whom I have found very punctual. They are Major General D. P. Goil and Dr. Bhupal Singh.

So I take this opportunity to suggest to my successor to try to enforce punctuality as far as possible as 'the best way to stop a bad habit is never to begin it'.

Other activities:—Besides the usual circulation of magazines and scientific clinical meetings this year we had 2 social gatherings too, but most of our attention has been diverted towards the arrangements for the coming All-India Medical Conference. The office-bearers of different sub-committees are doing their best to make it a success. General Organising Secretary Dr. Bose is putting up enormous work with his daily in and out correspondence. I am confident the combined efforts of all would make the Conference a success.

Conclusion:—Before I lay the reins of my office I would appeal to the members to work in co-operation to raise the standards of this Association. As we all know it as an admitted fact that there could be no hive nor sweet honey unless the bees worked as a colony and on the lines of mutual aid and co-operation.

In the end I am thankful to my worthy colleagues and the other members of the Executive Committee namely, Dr. Bhupal Singh, Major General D. P. Goil, Dr. R. C. Mitter, Dr. Murari Lal and Dr. Shri Bas for their constant help and co-operation they have given me all through the year. I am also very grateful to Mr. Mool Chand who has been kind enough and taking pains in auditing the accounts of our Association. Last but not the least I am thankful to Dr. Jia Lal, Dr. G. S. Bhargava, Major General D. P. Goil, Dr. R. C. Chaurasia and Dr. Prayag Chandra who have helped me by giving the members nice treats. I have tried to follow the following saying to the best of my capability, *i.e.*, "The best way to get rid of one's duties is to discharge them." Since now I am discharging myself off the same, I beg to be excused for any shortcomings on my part during the tenure of my office.

"Now I close with my greetings of cheer,
Wealth of good wishes to last you a year".

RADHA GOVIND DAS, *Chairman.*
O. PROSAD, L.S.M.F., *Hony. General Secretary.*

GADAG BRANCH

At a meeting of the Gadag Branch of the Indian Medical Association held on 20th September, 1938, the following two resolutions were passed:

This Association strongly protests against the All-India Medical Council Act as (i) the licentiates in India are not registered on All-India Medical Register, (ii) there is no reciprocity as regards registration and practice between India and the foreign countries and some other reasons.

This Association endorses the resolution No. 13 passed at the XII All-India Medical Conference, about fees for medical examination of Insurance cases; and it was recommended that no doctor should examine cases of Insurance of companies who pay a fee less than Rs. 8/- for Rs. 1,000/-.

D. KOLOGI,
Hony. Secretary.

MEDICAL NOTES AND NEWS

SILCHAR DOCTORS ON FEES FOR INSURANCE EXAMINATION

The following resolutions were passed unanimously in a meeting of Medical Graduates of Silchar on the 14th July, 1938. Dr. P. R. Gupta, M.B., D.T.M., Assistant Surgeon, Silchar, Civil Hospital, presided:

1. We, the undersigned Medical Graduates practising in Silchar, do hereby resolve that the rates of fees offered by the Bharat Insurance Co. Ltd., the Industrial and Prudential Life Assurance Co. Ltd., and the General Assurance Society Ltd., for medical examination of their cases are considered too inadequate and unacceptable, in consideration of the responsibility and importance of the work involved and therefore the Companies concerned are informed that we stop examination of their cases forthwith, and will not resume such examination unless and until the previous rates are restored.

2. We, further, do resolve that the fees offered by the Indian Mutual Life Association Ltd., are also considered too inadequate and unacceptable in consideration of the responsibility and importance of the work involved and therefore this Company be informed that we stop examination of their cases forthwith and will not resume such examination until the Company increase their fees to at least Rs. 8/- for cases of 1,000/- and Rs. 5/- for cases of Rs. 500/-.

POST-VACCINIAL ENCEPHALITIS

The incidence and fatality of post-vaccinial encephalitis formed one of the subjects recently discussed at the International Office of Public Health, when Professor Reiter, the German delegate, stated that during 1936 ten suspected cases after primary vaccination had been reported. In five the diagnosis was supported by clinical examination, but in none by necropsy. Three patients recovered and two died. The one necropsy which was performed showed meningitis but not encephalitis. According to Dr. M. T. Morgan, the British representative, five cases of post-vaccinial encephalitis, of which three were fatal, were reported in England and Wales in 1936 and three more in 1937 up to September 15, which were all fatal. The ages of the children ranged from 4 months to 15 years. As in the German cases the encephalitis was always the sequel of primary vaccination. No mention is made of a post-mortem examination. Professor G. Petragnani, the Italian delegate, stated that of 1,104,520 primary vaccinations and 1,205,971 revaccinations performed in Italy in 1936 and in the spring of 1937 only five cases were reported in 1936 and six in 1937. In every case the intradermal method was used. Of the eleven cases four were in the north of the kingdom, two in the centre, and four in the south. Ten occurred in the spring and only one in the winter. Six were fatal, and in two pareses appeared as sequels. The ages of the patients ranged from 8 months to 8 years, and no case occurred in children vaccinated at the sixth month in accordance with the law concerning primary vaccination. According to Professor Kling, the Swedish delegate, in the period 1924-36 inclusive that there had been forty-three cases of encephalitis following primary vaccination with eight deaths, and eleven cases with two deaths following revaccination. As regards age distribution most of the cases appeared during the first two years of life and immediately before school age. (*B. M. J.*).

SUICIDE BY TUBERCLE BACILLI

We are rarely given the opportunity to record observations in man in which the conditions are comparable to those in experimental animals. A case reported by A. Lemierre and P. Ameuille is noteworthy not only for the circumstances leading to the illness of the patient but also for the light which the clinical and pathological observations throw upon certain points in the ætiology of tuberculosis. A medical man aged 29 with a "history of tuberculosis in the family," who had probably suffered from pulmonary tuberculosis himself a few years earlier and who at all events had shown a positive Pirquet test a short time before the onset of his illness, gave himself, in an attempt at suicide, an intravenous injec-

tion of virulent tubercle bacilli. Two days later a pyrexia began which persisted until his death three months from then. A radiograph nine days after the inoculation showed normal lung fields, but in one taken thirty-two days after the inoculation the typical appearance of miliary tuberculosis was seen; twelve days before death there was confluence of these shadows. Enlargement of the spleen was observed within the first few days of the illness, but there were no cough, sputum, or dyspnœa and no physical signs in the lungs until shortly before the man died from meningitis. Repeated examination of the blood showed at first a relative mononucleosis with only 53 per cent. neutrophils, and then a gradual increase of the latter to 90 per cent.; eosinophils were absent throughout. It is of great interest that ten days after the inoculation no tubercle bacilli were isolated from the blood by Lœwenstein's technique or by animal inoculation, showing that the organisms had already by that time established themselves in the tissues. Though it is almost certain that bacilli reached other organs in the body, clinically lesions were found only in the lungs and meninges. Finally the case appears to show conclusively that in certain circumstances at all events exogenous reinfection may overcome immunity acquired by previous tuberculous infection. (*B. M. J.*).

RESEARCH APPRENTICES

In the past recently qualified men with a bent for research too often had to give up hope of developing it for a lack of means of support during an apprenticeship. Later came an epoch where grants were obtainable from various sources, but their acceptance usually implied some obligation to collect observations or experimental results for publication. It is now realised that the time spent on immature effort of this kind can be better applied and that allowance for an unproductive period may yield far better fruit in the long run. The Medical Research Council are inviting applications for the third batch of post-graduate studentships of £200. These are designed to maintain for a year man and women who have already held house appointments and are strongly inclined to a career in clinical science or experimental pathology. The intention is to select graduates "of special ability and original mind", and a ladder is provided, in the form of research fellowships, for those who aspire to become investigators in branches of medical science concerned directly with disease as it occurs in human beings. Wide scope is offered to the post-graduate student in his choice of work, the only reservation is that he must be advancing his training in methods of research, not working for higher examinations. It is probable that many given this chance will prove to have originality and zeal without that peculiar blend of curiosity, logic, and persistence which spells success; but even if they do not choose, or are not chosen, to persue a career in scientific medicine their work in any other branch cannot but benefit from the experience gained. (*Lancet*).

MAJOR AND MINOR SURGERY

In two recent communications, Hubert A. Royster makes a plea that the term "minor surgery" be eliminated from our nomenclature because of possible implications. He advances the argument that the labelling of certain procedures as minor may mislead an intern or a general practitioner into believing that any condition requiring surgical intervention can be regarded as minor. Only one of 104 surgeons whom he consulted believed the division of surgery into major or minor is justified. The principal objection to the term, it appears, is that it is vague and ill defined. There exist no definite criteria by which to designate any one procedure as minor or major. What appears to be simple procedure may develop into the most complicated one. What is a minor operation in the hands of a skilful surgeon may prove a major one in the hands of the unskilled surgeon. Such criteria as time required to perform an operation, the mortality, the skill required, the question of anesthesia, the question of whether it can be performed in the office or requires hospitalization are all variables. The suggested substitutes for the term minor surgery, such as office surgery, ambulant surgery or dispensary surgery, are hardly an improvement. Royster argues that all surgery is based on the same fundamental principles and is therefore not divisible. In no other field of medicine does a similar division into major and minor procedures exist. Actually the term minor surgery has largely disappeared from the curriculum of our leading medical schools. (*J. A. M. A.*).

CONGRESS OF EXAMINERS FOR INSURANCE COMPANIES

The International Congress of Examiners for Insurance Companies will be held on May 18, 1939, at Paris. The honorary presidents are Dr. P. Hornig of Berlin and Sir Walter Langdon-Brown of London. The president is Prof. M. Leoper of Paris. Papers will be read on the influence of pulmonary tuberculosis, hyperthyroidism, obesity, tobacco and albuminuria on life expectancy. A series of papers will also be read on the value of vital statistics in life insurance. Dr. Wireman Cook of Minneapolis will take part in the last-named symposium. Inquiries regarding the congress can be sent to Dr. P. A. Carrier, 8 rue de Belloy, Paris, 16(e). (*J. A. M. A.*).

SOCIETY FOR STUDY OF THE CIRCULATION

The German Society for Study of the Circulation met in annual convention in March at Bad Nauheim. The chief topic was collapse and related pathologic conditions. Frau Gollwitzer-Maier spoke on the experimental pathology of circulatory collapse. The many definitions of collapse, which never correspond with one another, compel us to place in the foreground not the definition itself but the precise observation of the manifestations. To-day a mojority of investigators regard the formerly differentiated conditions of a shock and collapse as belonging to the same clinical picture. In the pathogenesis of collapse the central circulation or the peripheral circulation may be principally involved, and humoral and nervous factors may also be differentiated. Among humoral factors histamine seems to play a conspicuous part, along with thickening of the blood and functional failure of the adrenals. The principal symptom of collapse is the decrease of the volume of blood in circulation, which in turn produces a diminution of the venous backflow. In collapse following trauma the histamine value is heightened in the venous blood of the injured parts. In collapse following burns an increase in the blood histamine is likewise demonstrable, so in both these conditions the substance must be of particular significance. Histamine causes first an ephemeral increase in minute volume, after which, because of the peripheral effect on the vascular wall, there is a decrease in minute volume accompanied by a fall in the blood and the venous pressure. Histamine exerts a constrictive effect on the large blood vessels. In the liver it induces contraction of the hepatic vein, but this cannot be the essential factor in shock, since histamine shock can be produced even after removal of the liver. In addition, histamine tends to irritate the terminal apparatus of the vagus within the heart. Furthermore, in collapse a decrease in the oxygenation of the arteries is demonstrable. Certain conditions favor the onset of collapse; *e.g.* narcosis, probably as a result of the concomitant capillary dilatation. In collapse one observes a decrease in body temperature that correspond to the decrease in minute volume, as the production of heat is closely related to the circulation. The pH of the blood also declines in collapse, and it remains depressed even after the blood pressure has risen.

Siebeck of Berlin discussed the clinical significance of collapse, reviewing the symptoms and referring, among other things, to the special role of the adrenal glands in collapse, as illustrated by the chararteristic states of collapse in Addison's disease. The hypophysis, too, plays an important part in collapse. The cause of a collapse may be of cardiac origin, as, for example, in cardiac infarction and in post-operative collapse in cases of exophthalmic goiter. In the diagnosis of collapse it is often difficult to distinguish between a cardiac and a peripheral origin. Among signs of collapse based on heart failure are cyanosis, congestion, gallop rhythm and dilatation of the heart. Signs suggestive of peripheral circulatory failure are plasma deficiency, thickening of the blood, diminution of sodium chloride in the urine and abnormal turgor of the skin. First therapeutic measures are placing of the patient in a recumbent position, application of heat to the body, bandaging of the lower extremities, administration of brandy, applications to the precordial area and, especially for nocturnal attacks, administration of camphor. The most important measure is the intravenous administration of fluid infusions of sugar and sodium chloride. Massive blood transfusions are indicated for increase in the circulatory volume. Inhalation of a mixture of carbon dioxide and oxygen stimulates respiration and leads to evacuation of the blood depots. In any case circulatory collapse calls for an intensive, active offensive in which the most diverse procedures are utilized.

Kirschner of Heidelberg discussed the surgical

aspects of collapse. He differentiated several types of collapse: (1) Collapse may take the form of heart failure with congestion cyanosis, (2) There is vascular collapse, (3) Nervous collapse is a form, (4) Collapse may be due to loss of blood, (5) Collapse takes place during operation, often induced by latent lesions; postoperative fatalities are usually due to collapse. Prophylaxis consists in timely support of the circulation and precaution against chilling, loss of blood and starvation before the operation. Undue exertions, *e.g.*, walking to the operating room and too early getting up after operation, are to be avoided. (6) Patients are in particular danger of collapse who have sustained trauma of the thorax, abdomen, spinal cord or brain. If collapse threatens, the surgical intervention should be reduced to a necessary minimum or performed in two stages. Use of the electric knife is also recommended. Other important remedies are stimulation of peristalsis by means of the intestinal tube and by injections of solution of posterior pituitary, as well as by complete abolishment of pain. An important consideration is the type of narcosis employed; rectal narcosis or intravenous narcosis is often safer than other types. (7) Collapse is especially likely to occur in a patient under lumbar anesthesia; the more extensive the anesthesia the greater the danger. Collapse readily appears in the presence of gas phlegmon and of suppurative processes within the thoracic and abdominal cavities, because of the extensive areas of toxic absorption.

On the second day Eppinger of Vienna discussed "Modifications of Permeability of the Capillaries" on the basis of his investigations of histamine collapse. By means of a new technic of staining the author was able to demonstrate the proteinic nature of the fluid in the tissues during collapse. The capillary membranes become permeable for protein during histamine collapse. In severe gastro-enteritis severe changes occur in the hepatic capillaries which lead to an outflow of protein from the blood into the perivascular interstitial clefts and to serious destruction of liver cells. Furthermore, this serous inflammation can lead to acute yellow atrophy and to cirrhosis of the liver. It therefore seems probably that through the production of severe vascular lesions the serous inflammation may represent the initial stage of cirrhosis of the liver. Vascular damage is also demonstrable in man in the vessels of the extremities. Permeability of the ions too, is altered. In contrast to the normal condition, one finds during anaphylactic shock that a large amount of potassium is present in the body serum and a small amount of sodium is present in the cells. The emigration of potassium and the influx of sodium produce the picture of cloudy swelling. Similar processes take place in the musculature during fatigue. Thus, Eppinger concluded, there are gradual transitions from fatigue to inflammation to death. (*J. A. M. A.*).

LIFE INSURANCE MEDICAL FEES AGAIN

It is indeed a matter of sincere gratification that our suggestion regarding the much discussed question of medical fees has at long last commended itself to both Dr. K. S. Ray, the General Secretary of the Indian Medical Association and Mr. K. C. Desai, the General Secretary of the Indian Life Offices' Association. In the very beginning, *i.e.*, before the recommendation of the Life Offices' Association for reduction of medical fees had aroused so much of controversy and heat, we stressed the necessity for a conference between the representatives of these two associations with a view to arrive at some amicable settlement. Dr. K. S. Ray is to be congratulated on the initiative he has taken in the matter. In our issue of the 17th September last Dr. Ray wrote:—"The Indian Medical Association is quite prepared to come to some reasonable and satisfactory arrangement, regarding this matter and it is also prepared to consider the difficulties of the insurance companies. The matter will have to be settled by mutual agreement between both the parties." Thanks are also due to Mr. Desai for his sporting acceptance of the suggestion. He has requested the doctor through the columns of this journal in its issue of the 15th instant to suggest practical steps for the calling of the conference. This, of course, he has done in his personal capacity since he had not the opportunity to consult the executive committee of his Association in the absence of any meeting in the meantime; there will not be, however, any difficulty on this score, since the members of the executive committee cannot be opposed to such a step being taken in view of the unfortunate situation that has arisen. We need hardly tell the members of the

Life Offices' Association that an immediate settlement of the dispute is absolutely necessary in as much as considerable troubles and difficulties are being experienced by some of the companies in the absence of concerted action on the part of the companies which are members of the Association. We cannot help observing in this connection that much of the present troubles would not have arisen had the Life Offices' Association obtained the opinion of its member bodies prior to coming to a decision in the matter; it must also be said in fairness to the members of the medical profession that they should also have been consulted before vitally affecting as it does their interest. Be that as it may, now that both the parties are willing to come to an amicable settlement in a conference we would take this opportunity of making one or two suggestions for their consideration.

Apart from the question of the settlement of scale of fees, which will undoubtedly form the main subject of discussion, the conference of the two accredited leading bodies should also evolve a scheme for the specialised training of medical examiners of life insurance cases, the imperative necessity for which we had stressed so much in one of our earlier leading articles on the subject. Then there are certain other important matters which should also receive the attention of the companies. The question of "rebate," *i.e.*, sharing of medical fees between the doctors and the agents, is a serious problem with the life offices and in spite of the best attempts of the latter to eradicate this evil, it is going on unabated. It is our belief that the active co-operation of the Indian Medical Association will go a long way in putting an end to this pernicious practice. We would also suggest that this opportunity should be availed of in acquainting the representatives of the Indian Medical Association with all about the life offices' issuing pink cards in respect of the delinquent medical examiners and inviting the I. M. A. to take penal measures on their side in order that the suppression of the questionable practices by medical examiners of accommodating conscience may not be easy. These are a few pressing problems with the life offices and we trust serious attempts will be made in the conference in coming to their proper solution. *Insurance Herald.*

BOOK REVIEWS

MEDICAL JURISPRUDENCE AND TOXICOLOGY. By John Glaister, M.D., D.Sc., Barrister-at-law, Regius Professor of Forensic Medicine, University of Glasgow. Sixth Edition. Edinburgh. E. & S. Livingstone, 1938. Size Demy 8 vo. Pages xiv +747. Figs. 107. Plates 8.

We welcome this sixth edition of Glaister's well-known text-book which is perhaps the best text-book on forensic medicine in the English language. A feature of this edition is that it is edited for the first time by Professor Glaister, the son of the late author. While preserving the original character of the book, Prof. Glaister has incorporated considerable changes, too much details of minor character being expunged, and many new materials of considerable medico-legal importance being added in their place. For instance, details of Ruxton Case with photographs of the reconstructed bodies and superimposed photograph of the reconstructed skull with regard to identification of the fragmentary and dismembered remains of the unfortunate victims, have been given which makes the body not only an interesting but most profitable study to those who want to put their heart and soul into medico-legal work. Finger prints and the method of obtaining them, investigations of the author regarding identification of hairs and fibres, and hairs from the different parts of the body, blood-grouping, identification of maggots, the use of ultra-violet light for the examination of seminal stains, war gases, etc. are some of the outstanding features which should prove of inestimable value to the medico-legal workers in India.

This edition has been set in large types with a more easily consulted index and with two beautifully coloured plates of poisonous berries and seeds. It is a mine of information to all concerned in medico-legal work, to students and practitioners, to lawyers and police alike. It may confidently be recommended to all who want to have an authoritative and practical information on any subject in forensic medicine and toxicology.

S. C. Bose.

THE WHEEL OF HEALTH. By G. T. Wrench, M.D. (Lond.). Published by the G. W. Daniel & Co., Ltd., pages 146, London, 1938. Size Demy 8 vo, Pages 146.

This book begins with the description of the Hunza people, one of the numerous tribes of Hindukush living in the mountainous regions, west of Gilgit, the northernmost outpost of India. These people are described as possessing perfect health with extraordinary longevity. They are of most active habits and their physical endurance and ability as slab climbers are thought to be perhaps the greatest in the world. They are unsurpassed by any Indian or Afgan race in the perfection of physique. The author made elaborate observations on their diet consisting of whole meal bread with germs and brans, plenty of fresh and sun dried fruits, vegetables including sprouting grams and milk, butter milk and curd cheese. They have occasional meat. They rarely have fish or game. The author compares the value of the diet with those of poorer classes of Bengalees and Madrasees, consisting of rice, pulses, vegetables, condiment and perhaps a little milk. The author refers to McCarrison's feeding experiments on rats and other researches in connection with his studies on deficiency diseases and various other problems of nutrition, which proved that various states of ill-health and diseases owe their origin from devitalisation with or without infection. The author compares this finding to similar conclusion regarding vegetable kingdom by Howard in his book named "The Role of Insects and Fungi in Agriculture". The latter observes that the insects and fungi are not the real cause of plant disease but only attack unsuitable varieties of crops improperly grown or imperfectly nourished. He further states that the policy of protecting crops from pests by means of spray powders and so forth is thoroughly unscientific and radically unsound. Such methods constitute no scientific solution of the trouble but are mere evasions. Similarly human beings should be protected against disease by making them *disease resistants* by proper dieting. McCarrison's experiments show that the

cause of the diseases is faulty food. The antiseptics, medicaments, inoculations and extirpating operations evade the real problem. The author concludes that the three transferences—soil to vegetable, vegetable to animal and animal and vegetable back to the soil—form the eternal *wheel of health*.

P. GANGULI.

SURGICAL HANDBOOK FOR HOSPITAL ASSISTANTS IN THE TROPICS. By W. K. CONNELL, F.R.C.S. (Eng.). Published by John Bale Medical Publications, London, 1938. Pages 440+xv, Size Royal 8 vo. Illustrated.

This book should be useful for the surgical assistants for whom it has been written, though we do not know the actual requirements of these men out in Africa. It is well managed into a small size and explains the first principles ably. It would certainly be of much help to the doctors as well who have to deal with surgical cases. There are many practical hints and many good illustrations. The author might not have mentioned in his preface that "The African natives work well only when they are following a definite and clear-cut routine". I think that holds good also for the natives of his home country.

A. K. S.

THE ESSENTIALS OF HUMAN EMBRYOLOGY. By G. S. DODDS, PH.D. Published by John Wiley & Sons Inc. NewYork, Second Edition, 1938. Pages 316+ix. Illustrated.

This book has envisaged the whole field of embryology within a short compass. It is very conservatively written without entering into the discussion of controversial points. All chapters are concise and would be of use only to those who know their embryology. For the beginner or the student a little elaboration is necessary which this book has not done.

A. K. S.

2nd Bengal Provincial Medical Conference 1938

SECOND SESSION, HOOGHLY.

PROGRAMME.

22nd November, Tuesday :

5-0 P.M.	...	Opening of Exhibition by Sjt. Nagendra Nath Mukherji, B.L., Chairman of Hooghly-Chinsurah Municipality.

23rd November, Wednesday :

4 P.M.—5-30 P.M.	...	Welcome address of the Chairman of the Reception Committee.
		Election of the President.
		Opening of the Conference by Mr. Tarak Nath Mukherji, B.SC., M.B.E., Chairman, District Board, Hooghly.
		Presidential address.
		Formation of the Subjects Committee.
5-30 P.M.—7 P.M.	...	Scientific Section.
7 P.M.—9 P.M.	...	Subjects Committee Meeting.

24th November, Thursday :

3 P.M.—5-30 P.M.	...	Scientific Section.
5-30 P.M. ...	...	Tea Party.
6 P.M.—8 P.M.	...	Conference resolutions.
8 P.M.—9-30 P.M.	...	Annual General Meeting of the Bengal Provincial Branch of the I. M. A.

25th November, Friday :

2 P.M.—2-30 P.M.	...	Group photograph.
2-30 P.M.—4-30 P.M.	...	Scientific Section.
4-30 P.M.—5-30 P.M.	...	Interval for Tea and Refreshments.
5-30 P.M.—7 P.M.	...	Conference.

CORRESPONDENCE

The Editor is not responsible for any views expressed by the contributor.—ED.

AGE-ORDER OF EPIPHYSIAL UNION IN BENGALEE GIRLS

THE EDITOR,
Journal of the I. M. A.
CALCUTTA.

Sir,

We have read with interest the comment of Dr. G. Galstaun on our article appearing in your August issue. We thank him for the patience and scrutiny with which he has viewed our article.

At the very outset we regret that errors have crept into two places, *viz.*, (1) in page 576, right hand column, para 1, line 2, "14" instead of "15 to 16" and (2) in page 577, left hand column, para 1, line 3, "14·3" instead of "15". The reader will please refer to an article "Medico-legal aspects of the determination of age of Bengalee girls" published earlier in April, 1938 in the *Indian Medical Record*, Vol. LVIII, No. 4, where the correct figures have been quoted.

It seems curious to us that Dr. Galstaun would in the same breath lay stress on the variation of ossification due to "climate, diet, physique, heredity and habits" and draw his conclusion from data collected from diverse communities of India. He is himself making contradictory statements, since his work "A study of Ossification as observed in Indian Subjects", loses all its potential value owing to his data having been drawn from communities as heterogenous ethnically, dietetically, etc., as "Pathans and Madrasees". In view of his painstaking work, one should have nothing to say had Dr. Galstaun not tried to average the norms of diaphysio-epiphysial union of widely divergent racial stocks as found in India and had he confined his observations to the Bengalees or Beharees or Punjabees, etc., alone.

It appears that Dr. Galstaun is not aware of the significance of the horoscope to Bengalee Hindu families. A horoscope records the birth of a child accurately to the minute; we are concerned with this part of the horoscope only and not with any of its astrological readings. As such, Dr. Galstaun's reference to Sir Arthur Eddington's discourse is, we are afraid, far out of the mark.

Regarding the criterion of union of epiphysis with diaphysis we have taken cognisance of only those cases that show a continuance of bony trabeculae between the two. As a matter of fact the academic discussion about the completion of such union according to Hellman or Todd or Galstaun fails to have any practical bearing, if we accept Todd's statement that once there has been bridging of the epiphysial cartilage by bony strands at one part the fusion between epiphysis and diaphysis is completed in six months. Hence even if, as Dr. Galstaun has hinted, a worker is not careful to see that the incident X'ray beam is not at an angle to the plane of epiphysial cartilage, the error of his findings cannot be more than 6 months.

As regards the tables, excepting the two misprints quoted above, we are sure that we have given all figures correctly from Dr. Galstaun's article of July, 1937, in the *Indian Journal of Medical Research*. We have gone by his own statements and not by any "bald average".

We must admit that but for his generalization of Indian communities, Dr. Galstaun's work would remain an outstanding one. We would request him to consider that the result of our "preliminary study" may, at a later stage, show a nearer approach to his results as corrected for individual communities.

We would gladly be on the look-out for his next paper on this very interesting subject and we hope he will confine his observations to one community only. In fact, a day may come when anthropologists will demand from us figures not only for the different provinces but also for the individual castes and subcastes residing therein. This may be of particular use in assessing the origin of newly enlisted castes in the Hindu fold as pointed out by Risley.

Yours faithfully,

SUSHIL KUMAR BASU, M.SC., M.B.,
D.T.M., D.P.H.
SUDHIR BASU, M.B.

16-10-38.

INSURANCE COMPANIES AND THEIR MEDICAL EXAMINERS

To

The Editor,

Journal of the I. M. A.

Sir,

I read with much interest the editorial comment of the September issue of your journal regarding medical fees for Life Insurance, and was equally interested to find in the Association Notes section of the same, the protests made by the various branch associations, such as Faridpur, Dacca, etc., against the reduction of medical fees by the Indian Insurance Companies, and that the same has been endorsed by the Provincial Branch at its meeting held on the 29th June, 1938, and an arrangement has been made to circulate the matter to all district associations for acting in the like manner. It is really a matter of grave concern, as it affects not only the purse of medical men, but hurts their professional dignity at the same time, and it is the duty of all medical men in the country to take an united front in upholding their prestige and interest as well. It is particularly the duty of the Indian Medical Association itself, as the representative body of the medical men of the soil to take up the cause in right earnest and negotiate with the Association of the insurance companies, for revision of the scale of medical fees, and bringing it to its former standard. The insurance companies know it fully well, that medical examination of their proponents is the vital part of their business, and on it alone rests their security and welfare. It is very strange, that in the face of this fact, the companies should think of lowering the doctor's fees every year, for saving expenditures, although the premium rates for policy holders, and the agents' commission, etc., remain the same. The plan of economy does not seem to reduce, in any way, the lavish expenses on the establishment items, such as the cost of office buildings and the furniture, which are maintained in a princely style. The axe, however, is only held on the head of the medical examiners, whom the companies look upon as their best friends, and with whom are entrusted the heaviest responsibility of selecting cases. Is it fair, that a poor remuneration should be meted out to a professional man, who has to exercise his specialised knowledge to a work, and devote much of his precious time over it? How do the companies expect a qualified medical man to examine the urine of a party and at the same time, record his blood pressure for a fee of Rs. 4/- or 6/- when the very instrument costs Rs. 60/-, even more? To do justice to the labours and skill of a medical man, the minimum fee for examining an Insurance party should be Rs. 10/- as it was the practice a few years ago, and this fee should be paid out of a separate fund by the company itself, and not out of the premium after it is paid by the proponent, as is being done nowadays. The medical fee should also be uniform, whatever the sum assured may be, as the doctor's work is always the same. These are the essential points, on the consideration of which the medical fees should be adjusted, to the best interests of the medical examiners as well as of the companies themselves.

There is another subject equally important which should be referred to in this connection. It is the system of the appointment of medical examiners by the Insurance companies, and which also requires a prompt reformation. Instead of making the selection of doctors themselves the insurance companies are in the habit of being guided by their agents, who naturally select doctors of their own liking, and try to influence and control these doctors, and if necessary threaten them, that their appointments rest on their recommendations. It is also found that the insurance authorities appoint several doctors in the same area, at the instance of these agents who make them understand that business is facilitated by appointing many doctors and as the authorities believe and act accordingly, the evil underlying remains overlooked. As generally these agents are out for business only, and care more for quantity than for quality, it is quite imaginable, how efficiency is maintained in securing business, if power is vested with these canvassers. The managing bodies of insurance companies should realise that this vicious system must go, if integrity of work is desired and the agents should never be entrusted with the responsible job of selecting medical examiners.

Yours etc.,

17-9-38. K. M. CHATTERJEE, M.B.,
Chinsura P. O.